<u>CAPÍTULO 5</u>

RESULTADOS DEL ANÁLISIS.

En este capítulo se exponen los resultados obtenidos tras la aplicación del método expuesto en el capítulo anterior a la totalidad del *corpus*.

Para la exposición distinguimos entre los dos géneros analizados: Introducciones de Artículos de Investigación (IAI) y Artículos 'Académicos Informales' (AAI). Se ofrecen los diversos resúmenes extraídos de cada texto del *corpus*, una vez aplicado el modelo de análisis propuesto en el capítulo anterior.

En primer lugar, presentamos las oraciones que hemos denominado como pertenecientes al 'cuerpo del texto'. Como hemos señalado anteriormente (sección 2. 3.), éstas sirven para fijar el número mínimo de conexiones a tener en cuenta para establecer las oraciones centrales, número que se obtiene a partir del número mínimo de conexiones que establecen las oraciones seleccionadas por el informante como pertenecientes al 'cuerpo del texto'. Junto a ellas, presentamos el resumen constituido por las oraciones centrales, las cuales lógicamente siempre incluyen las oraciones pertenecientes al 'cuerpo del texto'.

En segundo lugar, mostramos los resúmenes confeccionados a partir de las conexiones que establecen la oración principal y concluyente, los cuales han sido supervisados individualmente por el informante. Cuando la oración principal o concluyente no muestra un resumen, presentamos lo que hemos denominado 'oración circular'. Ésta la podemos definir como aquella oración que, sin ser concluyente o principal, es capaz de expandir su radio de acción mediante la repetición léxica y ofrecer un resumen del contenido del texto original.

Por último, señalar que los textos resultantes tras eliminar las oraciones marginales o que no establecen ninguna conexión no se presentan en esta sección, ya

que la alargaría excesivamente. Hemos confirmado que la eliminación de las mismas no afecta a la coherencia del texto original y los ofrecemos en el anexo.

Es cierto que, como afirma Hoey (1991a: 118), los resúmenes aquí presentados pueden carecer de un estilo adecuado de redacción. Recordemos que nuestro objetivo es investigar la relación entre léxico y discurso, su capacidad, mediante la repetición, de organizar la información textual; por ello, con la eliminación de oraciones no queremos dar a entender que no cumplan un objetivo en el texto, ni que carezcan de importancia, sino simplemente confirmar que no contribuyen al contenido del texto original. Asimismo, no afirmamos que no exista otra posible combinación de oraciones que pueda aportar un resumen del texto original, pero sí que la que aquí se presenta recoge la información fundamental del mismo.

Cada texto analizado se presenta de forma individual con sus correspondientes resúmenes y los siguientes gráficos y tablas:

1) Gráfica representativa del número de enlaces entre oraciones.
2) Gráfica representativa del número mínimo de enlaces para establecer conexiones entre oraciones.
3) Gráfica representativa del número de conexiones y número de oraciones. En ella se indica el número de conexiones establecidas por las oraciones y el número de oraciones que poseen dichas conexiones.
4) Gráfica que indica el número mínimo de conexiones a tener en cuenta para establecer las oraciones centrales.
5) Gráfica representativa del número de oraciones que constituyen un resumen, teniendo en cuenta las oraciones centrales, las oraciones que conexionan con la oración principal y las que conexionan con la oración concluyente.
6) Tabla representativa de los diferentes tipos de repetición léxica.

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5. 1. Resúmenes de las introducciones del artículo de investigación (IAI).

En esta sección se presentan los distintos resúmenes de las introducciones de los artículos de investigación junto con sus correspondientes gráficas y tablas.

5. 1. 1. Texto 1: *Bioconversion of solid food wastes to etanol*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 7, 17 y 18.[1] Por lo tanto, tendremos en cuenta 5 conexiones como mínimo para establecer las oraciones centrales.

5. 1. 1. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 7, 17 y 18.

7. Utilization of food processing wastes to produce fuel alcohol with an increased efficiency has been under investigation in our laboratory for the past few years.

17. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

5. 1. 1. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 7 y es una de las que presenta más conexiones con las oraciones posteriores. Las oraciones 4, 6, 7, 8, 13, 17 y 18[2] constituyen un resumen, puesto que establecen conexiones con la oración 7.

4. Ethanol production from agricultural products has been in practice for the past 80 years. **6**. Wastes from food processing industries represent a severe pollution problem and need better waste management techniques. **7**. Utilization of food processing wastes to produce fuel alcohol with an increased efficiency has been under investigation in our laboratory for the

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[1] La oración 7 introduce el tema informando sobre la investigación que los autores llevan realizando desde los últimos años. La oración 17 especifica qué se utiliza, la técnica aplicada y sus ventajas para la producción de etanol. Por último, la oración 18 señala los objetivos de la investigación.

[2] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

past few years. **8**. We were able to develop a novel and highly efficient cofermentation system for food wastes containing starch and lactose.

13. Several studies on ethanol production via fermentation and the effects of different factors on the fermentation have been published in the past decade. **17**. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

5. 1. 1. 3. Resumen del texto a partir de la oración concluyente 1.

Una de las oraciones concluyentes es la 17[3] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 4, 7, 8, 11, 12, 13, 14, 15, 17 y 18 constituyen un resumen, puesto que establecen conexiones con la oración 17. En este caso, es posible elevar el número de enlaces hasta 5, lo cual nos permite obtener un resumen sólo con las oraciones 8,[4] 15, 17 y 18.

8. We were able to develop a novel and highly efficient cofermentation system for food wastes containing starch and lactose.

15. <Their> [Whalen et al.] work involved the fermentation of lactose/corn mash by the use of a dual yeast inoculum (*Kluyveromyces marxianus* and distillerís yeast). **17**. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

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[3]   Podemos considerarla como concluyente, ya que el autor, después de presentar los estudios realizados sobre el tema, presenta la técnica utilizada en su investigación.
[4]   Se puede observar que la sustitución de la oración 7, perteneciente al 'cuerpo del texto', por la número 8 no afecta a que este resumen contenga la información fundamental del texto original.

**5. 1. 1. 4. Resumen del texto a partir de la oración concluyente 2.**

Otra posible oración concluyente es la 18[5] y es la segunda que presenta más conexiones con las oraciones anteriores. Las oraciones 7, 8, 13, 14, 17 y 18 constituyen un resumen, ya que establecen conexiones con la oración 18. En este caso es posible elevar el número de enlaces hasta 4, lo cual nos permite obtener un resumen sólo con las oraciones: 8, 14, 17 y 18.

8. We were able to develop a novel and highly efficient cofermentation system for food wastes containing starch and lactose.

14. Utilization of cheese whey as the liquid portion of a fermenting corn mash has been investigated by Whalen et al. **17**. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

1) Gráfica representativa del número de enlaces[6] entre oraciones:


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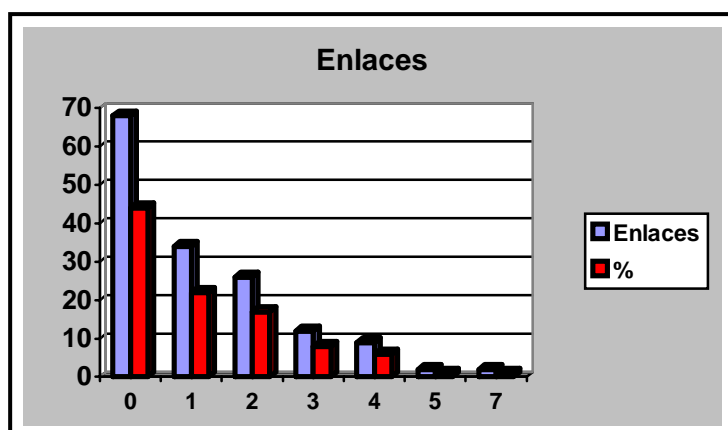
[5] En nuestra opinión esta oración se puede considerar concluyente en este tipo de textos, ya que es la que expresa el objetivo de la investigación.

[6] En la contabilización de los enlaces no se han tenido en cuenta los enlaces dudosos.
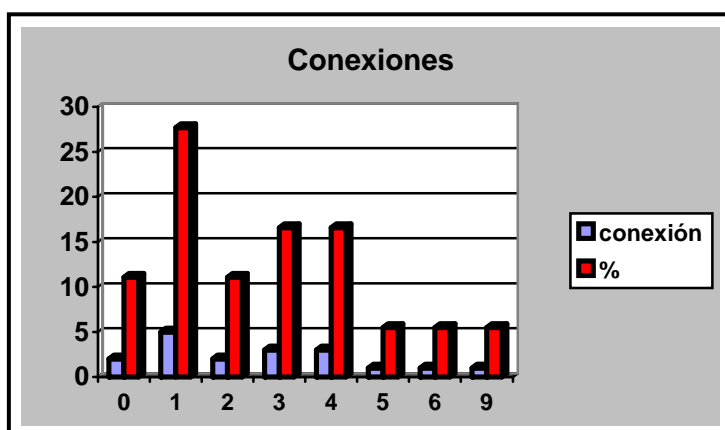
Enlaces	0	1	2	3	4	5	7	Total
Celdas[7]	68	34	26	12	9	2	2	153
%	44'4	22'2	16'9	7'8	5'8	1'3	1'3	99'7

2) Gráfica representativa del número de enlaces[8] para establecer conexiones entre oraciones.

Enlaces / conexión

■ 3 o más
■ Total
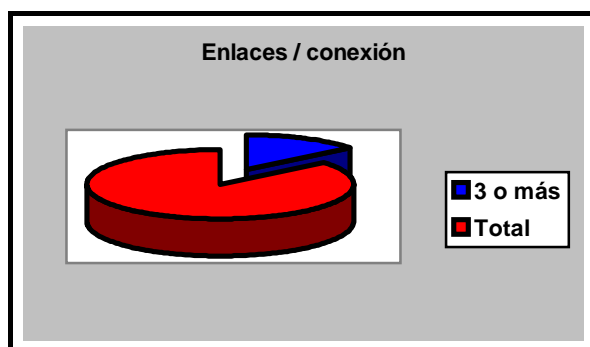
Menos de 3	%	A partir de 3	%
128	83'6	25	16'3

3) Gráfica representativa del número de conexiones y número de oraciones.

Conexiones

■ conexión
■ %

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7   Pares de oraciones enlazadas mediante la reiteración.
8   En la contabilización del número mínimo de enlaces para establecer una conexión entre oraciones se han tenido en cuenta los enlaces dudosos.
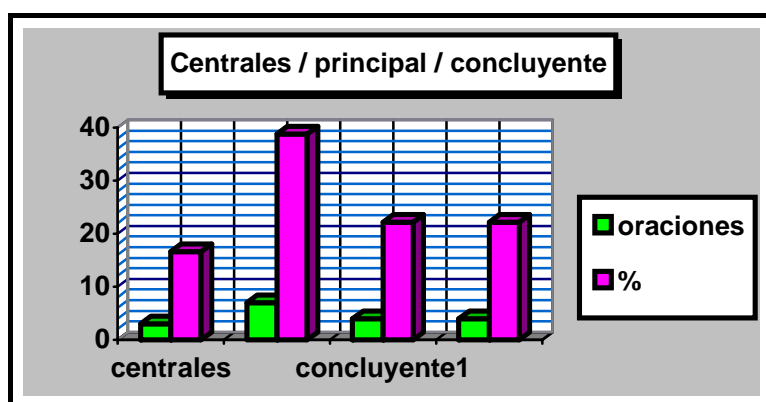
Resultados
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Nº conexiones	0	1	2	3	4	5	6	9	Total
Nº oraciones	2	5	2	3	3	1	1	1	18
%	11'1	27'7	11'1	16'6	16'6	5'5	5'5	5'5	99'6

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
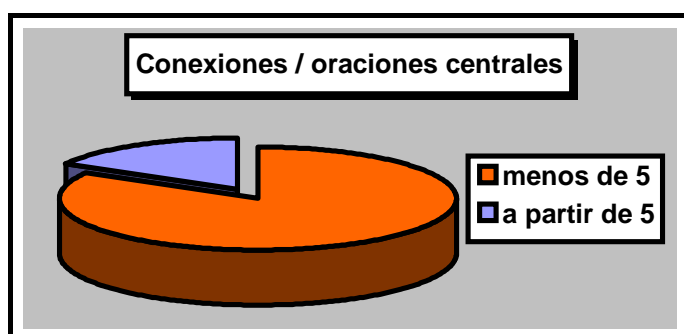
Menos de 5	%	A partir de 5	%
15	83'3	3	16'6

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Tipo de oraciones	Nº oraciones	Total	%
Centrales	3	18	16'6
Principal	7	18	38'8
Concluyente 1	4	18	22'2
Concluyente 2	4	18	22'2

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	107	53	9	2	1	4	6	1	1	0	0	0	184
%	58'1	28'8	4'8	1	0'5	2'1	3'2	0'5	0'5	0	0	0	99'5

5. 1. 2. Texto 2: *Speciation as an analytical aid in trace element research in infant nutrition*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 5, 8, 12, 18, 20 y 21.[9] Por lo tanto, tendremos en cuenta 10 conexiones como mínimo para establecer las oraciones centrales.

5. 1. 2. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 5, 8, 12, 18, 20 y 21.

5. The infant's trace element requirement is supplied not only by amounts transferred via the mother's milk in specific binding forms or by formula, but also from prenatal stores.

8. In early infancy, breast milk or cow's-milk-based and soy- based formulas are the only dietary source of essential trace elements. **12**. With the sole exception of selenium, the trace element intake of infants via formula is significantly higher than via breast milk.

18. In spite of the significantly lower trace element intake of breast-fed infants, their serum concentrations of the essential elements Cu, Fe and Zn are comparable to those of formula-fed infants. **20**. Because no signs of deficiency were observed in breast-fed infants, the bio availibility of copper, iron and zinc of the special binding proteins in human milk must be considerably higher than that in cow's milk or soy-based formula.

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[9] Las oraciones 5, 8, 12 y 18 introducen el tema de la investigación. La oración 21 indica el objetivo de la misma.

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21. In the light of these facts, we considered it of importance to investigate the concentration, chemical form and nutritive value of trace elements in both human milk and infant formulas, with our ultimate goal being to obtain as much information as possible about adequate infant nutrition.

5. 1. 2. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 5 y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 1, 5, 7, 8, 9, 10, 11, 12, 13, 14, 18, 20, 21 y 22 constituyen un resumen, ya que establecen conexiones con la oración 5. Se puede elevar el número de enlaces a 5, lo cual nos permite obtener un resumen con las oraciones 1, 5, 7, 8, 9, 10, 11, 12, 14, 18, 20, 21 y 22.[10]

1. During the prenatal period, the fetus is supplied with minerals and trace elements via maternal circulation and controlled placental transfer. **5**. The infant's trace element requirement is supplied not only by amounts transferred via the mother's milk in specific binding forms or by formula, but also from prenatal stores. **7**. Trace elements must be added to pre-term infants' formulas to satisfy their higher dietary requirements.

8. In early infancy, breast milk or cow's-milk-based and soy- based formulas are the only dietary source of essential trace elements. **9**. The mother's milk provides an adequate supply of all micronutrients for the full-term infant. **10**. The concentrations and the fairly well defined binding pattern of the essential trace elements in human milk are therefore used as a reference. **11**. On the other hand, the trace elements chromium, copper, zinc, iron, manganese, molybdenum, iodine and, recently, selenium have been added to the formulas as compounds and at concentration levels that are different from those found in breast milk. **12**. With the sole exception of selenium, the trace element intake of infants via formula is significantly higher than via breast milk. **14**. In the case of manganese, the supply of the formula- fed infant can be as much as 1000 times higher than that of the breast-fed infant.

18. In spite of the significantly lower trace element intake of breast-fed infants, their serum concentrations of the essential elements Cu, Fe and Zn are comparable to those of formula-fed infants. **20**. Because no signs of deficiency were observed in breast-fed infants, the bio availibility of copper, iron and zinc of the special binding proteins in human milk must be considerably higher than that in cow's milk or soy-based formula.

21. In the light of these facts, we considered it of importance to investigate the concentration, chemical form and nutritive value of trace elements in both human milk and infant formulas, with our ultimate goal being to obtain as much information as possible about adequate

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[10]   Se puede observar que este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

infant nutrition. **22**. We therefore carried out speciation studies to determine the binding form of trace elements in these nutritive fluids, combining methods for protein separation with methods for trace element determination in the eluted fractions.

5. 1. 2. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 21[11] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 5, 7, 8, 9, 10, 11, 12, 14, 18, 20, 21 y 22 constituyen un resumen, puesto que están conectadas con la oración 21. Se puede incrementar el número de enlaces a 6, con lo que obtenemos un resumen[12] sólo con las oraciones 5, 8, 11, 12, 18, 20, 21 y 22 (dudosa)[13].

5. The infant's trace element requirement is supplied not only by amounts transferred via the mother's milk in specific binding forms or by formula, but also from prenatal stores.

8. In early infancy, breast milk or cow's-milk-based and soy- based formulas are the only dietary source of essential trace elements. **11**. On the other hand, the trace elements chromium, copper, zinc, iron, manganese, molybdenum, iodine and, recently, selenium have been added to the formulas as compounds and at concentration levels that are different from those found in breast milk. **12**. With the sole exception of selenium, the trace element intake of infants via formula is significantly higher than via breast milk.

18. In spite of the significantly lower trace element intake of breast-fed infants, their serum concentrations of the essential elements Cu, Fe and Zn are comparable to those of formula-fed infants. **20**. Because no signs of deficiency were observed in breast-fed infants, the bio availibility of copper, iron and zinc of the special binding proteins in human milk must be considerably higher than that in cow's milk or soy-based formula.

21. In the light of these facts, we considered it of importance to investigate the concentration, chemical form and nutritive value of trace elements in both human milk and infant formulas, with our ultimate goal being to obtain as much information as possible about adequate infant nutrition.
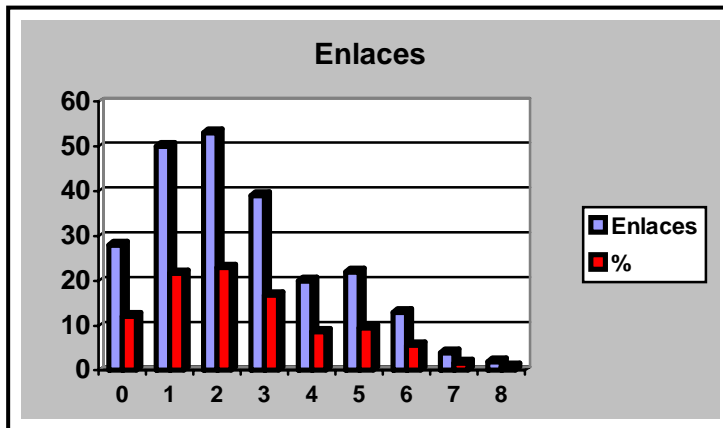
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[11]   Consideramos que esta oración es concluyente, ya que expresa el objetivo de la investigación.
[12]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.
[13]   Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.
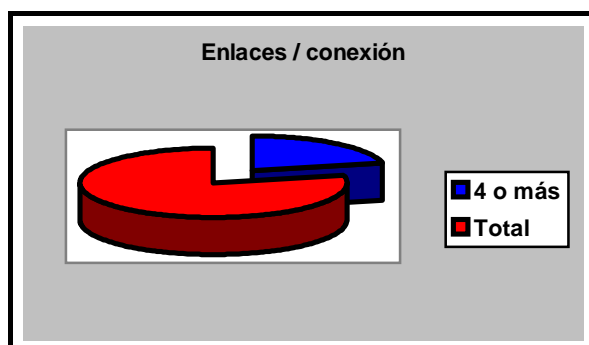
1) Gráfica representativa del número de enlaces entre oraciones.

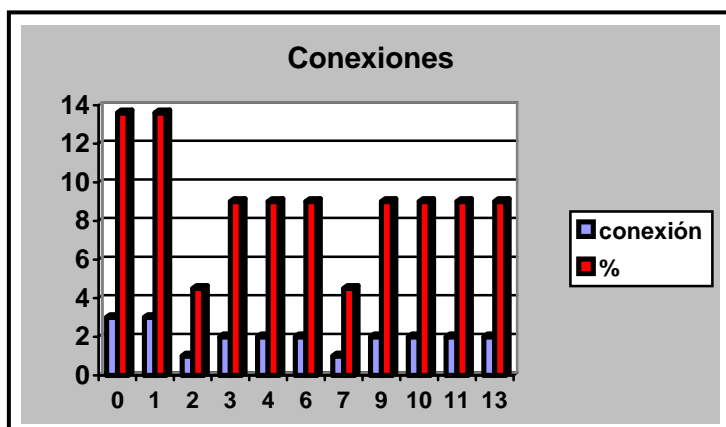| Enlaces	0	1	2	3	4	5	6	7	8	Total
Celdas	28	50	53	39	20	22	13	4	2	231
%	12'1	21'6	22'9	16'8	8'6	9'5	5'6	1'7	0'8	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Menos de 4	%	A partir de 4	%
168	72'7	63	27'2

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº conexiones	0	1	2	3	4	6	7	9	10	11	13	Total
Nº oraciones	3	3	1	2	2	2	1	2	2	2	2	22
%	13'6	13'6	4'5	9	9	9	4'5	9	9	9	9	99'2

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 10	%	A partir de 10	%
16	72'7	6	27'2

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.
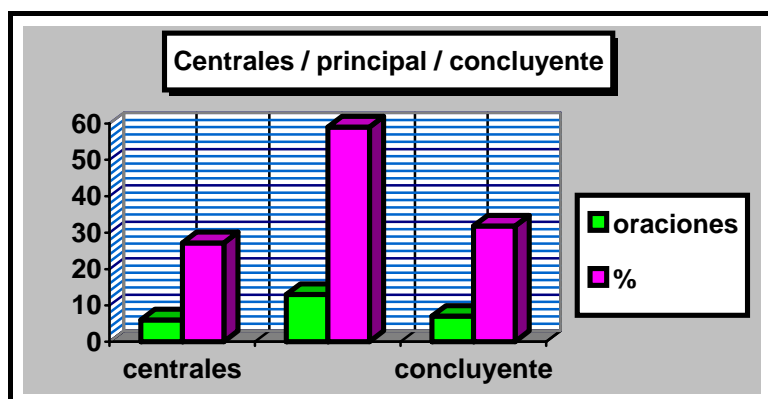
Tipo de oraciones	Nº oraciones	Total	%
Centrales	6	22	27'2
Principal	13	22	59
Concluyente	7	22	31'8

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	357	19	95	0	8	7	30	85	0	0	1	2	604
%	59'1	3'1	15'7	0	1'3	1'1	4'9	14	0	0	0'1	0'3	99'6

5. 1. 3. Texto 3: *Analysis of carbonaceous aerosols: interlaboratory comparison***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 3, 14, 15, 17, 19 y 26.[14]

Por lo tanto, tendremos en cuenta 6 conexiones para establecer las oraciones centrales.

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[14]   La oración 3 introduce el tema de la investigación. Las oraciones 14 y 15 describen el método y la técnica de la investigación. La oración 17 defiende la elección del método y la 19 justifica la comparación que se va a efectuar. Por último, la oración 26 informa de la comparación llevada a cabo entre laboratorios mediante la utilización de dos métodos.

5. 1. 3. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 3, 4, 9, 11, 14, 15, 16, 17, 19, 23 (dudosa)[15] y 26.[16]

3. Some ~~of these~~ aerosols [asphalt fumes, oil mists, cigarette and wood smokes, carbon black, and diesel exhaust] are known or suspect human carcinogens (e,g., cigarette smoke and diesel exhaust, respectively) and have been linked to other adverse health effects (e.g., asthma, heart disease) **4**. Exposure to diesel exhaust is of particular concern because it has been classified a probable human carcinogen and diesel equipment use is widespread in (e,g., trucking, transit, mining, railroads, agriculture).

9. The US Environmental Protection Agency (EAP) has proposed an inhalation Reference Concentration (RfC) of 5 μ/m^{-3} for the noncancer health effects of diesel exhaust and the State of California Office of Environmental Health Hazard Assessment (OEHHA) has proposed adoption of this value for the chronic inhalation reference exposure level in California. **11**. Comprehensive reviews of the potential health effects of exposure to diesel exhaust exposure have been recently published.

14. The [carbon-based] method, recently published as National Institute for safety and Health (NIOSH) Method 5040, is based on an evolved gas analysis technique called the 'thermal-optical method'. **15**. With this technique, speciation of organic and elemental carbon (OC and EC, respectively) is accomplished through temperature and atmosphere control and by an optical feature that corrects for pyrolytically generated carbon, or 'char', formed during the analysis of some materials. **16**. Although both organic and elemental carbon are determined in the analysis, EC is the superior marker of diesel particulate because it constitutes a large fraction of the particulate mass, it can be quantified at background (i.e., environmental) levels, and its only significant source in most workplaces is the diesel engine. **17**. Different approaches can be applied for OC-EC analysis, but a thermal-optical method was selected because the instrumentation has desirable design features not present in other carbon analyzers.

19. In a previous study, different methods gave widely varying results in the speciation of organic and elemental carbon. **26**. Four laboratories employing the coulometric method <also> participated in the interlaboratory comparison, giving a total of eleven laboratories (seven thermal-optical and four coulometric).

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[15] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo el texto'.

[16] La introducción de las oraciones 4 y 9 no interrumpe el argumento, ya que enfatizan la importancia de la investigación llevada a cabo. La oraciones 11 y 16 tampoco interrumpen el argumento, ya que la 11 informa de las investigaciones realizadas sobre el tema y la 16 de la importancia de EC.

5. 1. 3. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 14[17] y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 11 (dudosa)[18], 14, 15, 17, 18, 21, 23, 24, 25 y 26[19] constituyen un resumen, puesto que establecen conexiones con la oración 14.

14. The [carbon-based] method, recently published as National Institute for safety and Health (NIOSH) Method 5040, is based on an evolved gas analysis technique called the 'thermal-optical method'. **15**. With this technique, speciation of organic and elemental carbon (OC and EC, respectively) is accomplished through temperature and atmosphere control and by an optical feature that corrects for pyrolytically generated carbon, or 'char', formed during the analysis of some materials. **17**. Different approaches can be applied for OC-EC analysis, but a thermal-optical method was selected because the instrumentation has desirable design features not present in other carbon analyzers. **18**. An in-depth discussion on Method 5040, including both technical and exposure-related issues, has been published elsewhere.

21. Given the operational nature of OC-EC method, it is important to examine interlaboratory variability of the method; however, when the thermal-optical method was initially evaluated, only one instrument was available, so interlaboratory variability could not be examined. **23**. Seven laboratories that perform thermal-optical analysis participated in the comparison. **24**. Six of them used NIOSH Method 5040 (i.e., they used identical instrumentation and thermal program), while the seventh used a variation on the method. **25**. Another thermal technique based on coulometric detection of CO_2 is being used in Europe for occupational monitoring of diesel particulate. **26**. Four laboratories employing the coulometric method also participated in the interlaboratory comparison, giving a total of eleven laboratories (seven thermal-optical and four coulometric).

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[17] No es sorprendente que esta oración, que se encuentra en mitad y no al inicio del texto, sea la principal. Habría que tener en cuenta que este tipo de textos está dirigido a investigadores altamente especializados y es la oración 14 la que inicia la descripción del método utilizado en la investigación y la que responde al título del artículo, siendo la parte que más interesa a un científico. Por esta razón, se puede suponer que el escritor utilice más enlaces para establecer relaciones con dicha oración.

[18] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.

[19] Las oraciones pertenecientes al 'cuerpo del texto' que no están presentes son: la 3, que introduce el tema y la 19, que justifica la comparación a efectuar. Por lo tanto, en este resumen aparece el 66'6% de la información esencial. Aún así, consideramos que es un resumen satisfactorio, dado que muestra el desarrollo de la información expresada por una de las oraciones más fundamentales del texto y justifica el porqué se realiza la comparación entre laboratorios con dos métodos.

5. 1. 3. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 26[20] y es la que establece más conexiones con las oraciones anteriores. Las oraciones 14, 17, 21, 22, 23, 24, 25 y 26[21] constituyen un resumen.

14. The [carbon-based] method, recently published as National Institute for safety and Health (NIOSH) Method 5040, is based on an evolved gas analysis technique called the 'thermal-optical method'. **17**. Different approaches can be applied for OC-EC analysis, but a thermal-optical method was selected because the instrumentation has desirable design features not present in other carbon analyzers.

21. Given the operational nature of OC-EC method, it is important to examine interlaboratory variability of the method; however, when the thermal-optical method was initially evaluated, only one instrument was available, so interlaboratory variability could not be examined. **22**. More recently, additional instruments were constructed by a commercial laboratory and an interlaboratory comparison was conducted. **23**. Seven laboratories that perform thermal-optical analysis participated in the comparison. **24**. Six of them used NIOSH Method 5040 (i.e., they used identical instrumentation and thermal program), while the seventh used a variation on the method. **25**. Another thermal technique based on coulometric detection of CO_2 is being used in Europe for occupational monitoring of diesel particulate. **26**. Four laboratories employing the coulometric method also participated in the interlaboratory comparison, giving a total of eleven laboratories (seven thermal-optical and four coulometric).

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[20] Puede considerarse como concluyente, ya que mediante ella el escritor termina el razonamiento del porqué se efectúa la comparación entre laboratorios.

[21] Las oraciones pertenecientes al 'cuerpo del texto' que no están presentes son las siguientes: 3, 15 y 19. Por lo tanto, en este resumen aparece el 50% de la información esencial. Aún así, al igual que ocurre con la oración principal, consideramos que es un resumen satisfactorio, dado que muestra el desarrollo de la información expresada por una de las oraciones más fundamentales del texto.
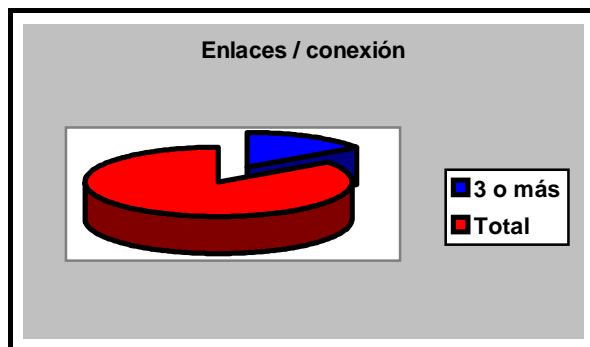
1) Gráfica representativa del número de enlaces entre oraciones.
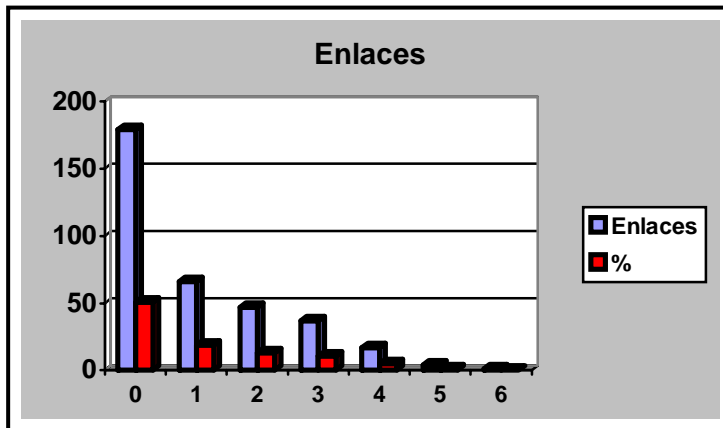
Enlaces
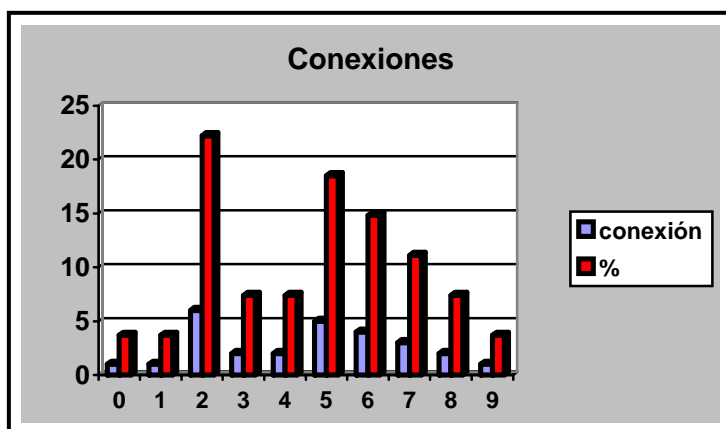
Enlaces	0	1	2	3	4	5	6	Total
Celdas	179	66	45	39	17	4	1	351
%	50'9	18'8	12'8	11'1	4'8	1'1	0'2	99,7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

3 o más
Total

Menos de 3	%	A partir de 3	%
286	81'4	65	18'5

3) Gráfica representativa del número de conexiones y número de oraciones.

N° Conexiones	0	1	2	3	4	5	6	7	8	9	Total
N° oraciones	1	1	6	2	2	5	4	3	2	1	27
%	3'7	3'7	22'2	7'4	7'4	18'5	14'8	11'1	7'4	3'7	99'9

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
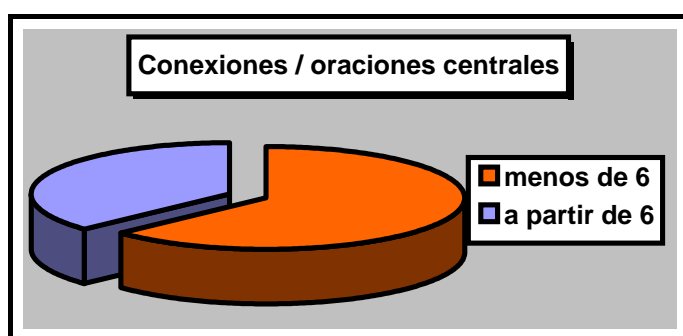
Menos de 6	%	A partir de 6	%
17	62'9	10	37

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.
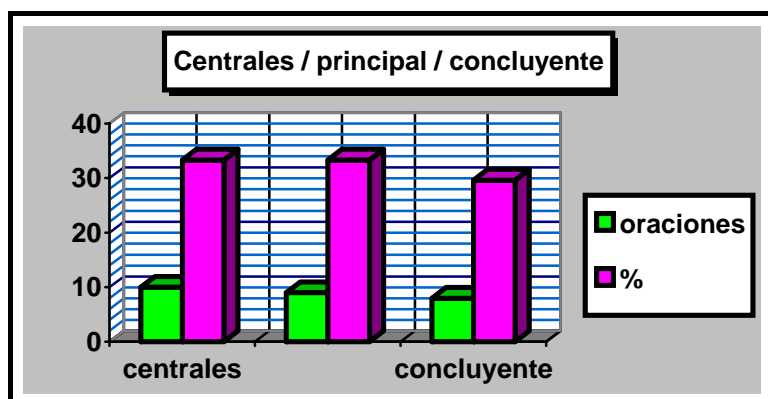
Tipo de oraciones	N° oraciones	Total	%
Centrales	10	27	37
Principal	9	27	33'3
Concluyente	8	27	29'6

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	327	19	14	9	0	3	4	3	1	0	0	1	381
%	85'8	4'9	3'6	2'3	0	0'7	1	0'7	0'2	0	0	0'2	99'4

5. 1. 4. Texto 4: *High-precision conductometric detector for the measurement of atmospheric carbon dioxide*: **Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 6, 13 y 14.[22] Tendremos en cuenta 7 conexiones para establecer las oraciones centrales.

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[22] La oración 6 introduce el tema indicando las dos formas de medir las concentraciones de CO_2. Las oraciones 13 y 14 informan sobre la nueva técnica utilizada y de las ventajas que presenta.

5. 1. 4. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 1 (dudosa)[23], 5 (dudosa), 6, 13, 14, 18, 19 y 21 (dudosa).[24]

6. Currently, C0$_2$ concentrations are determined either by collecting air in flasks for analysis offsite or by continuous monitoring in the field.

13. The new technique described here for measurement of C0$_2$ mixing ratios is based on the increase in conductivity that occurs when deionized water makes contact with air by use of microporous hollow fiber membranes. **14**. The detector is sufficiently small and lightweight to be operated from kite and balloon platforms for continuous vertical profiling of the atmosphere and has adequate precision and accuracy to determine landscape-scale fluxes of C0$_2$ from vertical profile measurements.

18. Symanski et al. designed microsensors for atmospheric C0$_2$ and were successful at measuring concentrations that would be found in highly polluted air. **19**. The instruments measured C0$_2$ mixing ratios in the range 0-3% and were not tested extensively at concentrations characteristic of "clean" air (~350-370 ppmv).

5. 1. 4. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 6 y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 6, 8, 9, 10, 13, 14, 18, 19 y 21[25] constituyen un resumen.

6. Currently, C0$_2$ concentrations are determined either by collecting air in flasks for analysis offsite or by continuous monitoring in the field. **8**. The disadvantages of batch analysis include sample storage and transport problems, limitation of the number of measurements by the number of available flasks, and a significant time lag between flask sample collection and analysis. **9**. For example, in a recent field campaign aimed at measuring the fluxes of greenhouse gases in the Amazon rain forest of Peru, we were limited to six flask samples to characterize each vertical profile through the convective boundary layer. **10**. Continuous monitoring is almost exclusively performed by NDIR

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[23]   Las oraciones 1, 5 y 21, que establecen conexiones mediante enlaces dudosos, no son necesarias, ya que no pertenecen al 'cuerpo del texto'.
[24]   La introducción de las oraciones 18 y 19 no interrumpe el argumento, ya que justifica la presente investigación.
[25]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

_____

13. The new technique described here for measurement of CO_2 mixing ratios is based on the increase in conductivity that occurs when deionized water makes contact with air by use of microporous hollow fiber membranes. **14**. The detector is sufficiently small and lightweight to be operated from kite and balloon platforms for continuous vertical profiling of the atmosphere and has adequate precision and accuracy to determine landscape-scale fluxes of CO_2 from vertical profile measurements.

18. Symanski et al. designed microsensors for atmospheric CO_2 and were successful at measuring concentrations that would be found in highly polluted air. **19**. The instruments measured CO_2 mixing ratios in the range 0-3% and were not tested extensively at concentrations characteristic of "clean" air (~350-370 ppmv). **21**. <This precision> [a RSD of ~2%] is adequate for polluted air measurements but does not meet the precision required (~0.1%) for monitoring the small concentration variations that are found in relatively unpolluted air, e.g., in the atmosphere above a forest canopy.

5. 1. 4. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 21[26] y es una de las que presenta más conexiones con las oraciones posteriores. Las oraciones 1, 5 (dudosa)[27], 6, 13, 14, 18, 19 y 21[28] constituyen un resumen.

1. The recent increase in atmospheric CO_2 mixing ratio is one of the most significant changes in the trace gas composition of the atmosphere. **6**. Currently, CO_2 concentrations are determined either by collecting air in flasks for analysis offsite or by continuous monitoring in the field.

13. The new technique described here for measurement of CO_2 mixing ratios is based on the increase in conductivity that occurs when deionized water makes contact with air by use of microporous hollow fiber membranes. **14**. The detector is sufficiently small and lightweight to be operated from kite and balloon platforms for continuous vertical profiling of the atmosphere and has adequate precision and accuracy to determine landscape-scale fluxes of CO_2 from vertical profile measurements.

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[26]   Esta introducción no presenta una oración que cierre el tema. La oración 21 puede considerarse como concluyente en tanto en cuanto termina el razonamiento del porqué los microsensores desarrollados anteriormente no son eficaces para la presente investigación.

[27]   Esta oración, que establece conexiones mediante enlaces dudosos, se puede suprimir, ya que no pertenece al 'cuerpo del texto.

[28]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

18. Symanski et al. designed microsensors for atmospheric CO_2 and were successful at measuring concentrations that would be found in highly polluted air. **19**. The instruments measured CO_2 mixing ratios in the range 0-3% and were not tested extensively at concentrations characteristic of "clean" air (~350-370 ppmv). **21**. <This precision> [a RSD of ~2%] is adequate for polluted air measurements but does not meet the precision required (~0.1%) for monitoring the small concentration variations that are found in relatively unpolluted air, e.g., in the atmosphere above a forest canopy.

1) Gráfica representativa del número de enlaces entre oraciones.
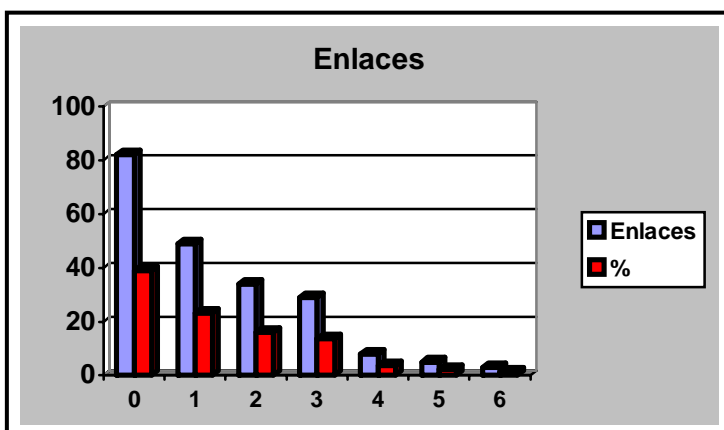
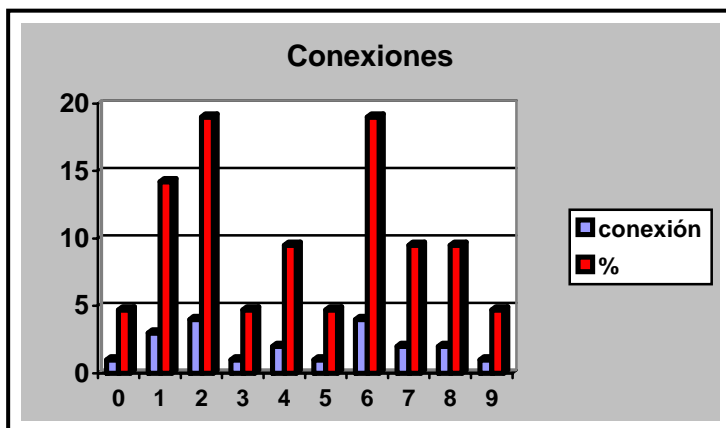| Enlaces	0	1	2	3	4	5	6	Total
Celdas	82	49	34	29	8	5	3	210
%	39	23'3	16'1	13'8	3'8	2'3	1'4	99'7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.
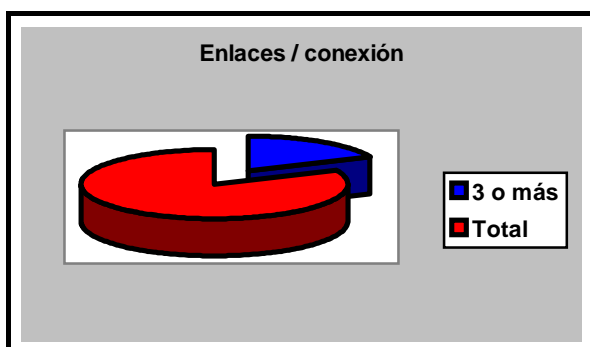
Menos de 3	%	A partir de 3	%
163	77'6	47	22'3

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº Conexiones	0	1	2	3	4	5	6	7	8	9	Total
Nº Oraciones	1	3	4	1	2	1	4	2	2	1	21
%	4'7	14'2	19	4'7	9'5	4'7	19	9'5	9'5	4'7	99'5

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
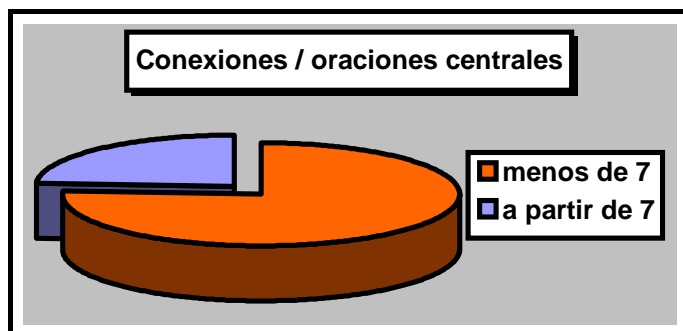
Menos de 7	%	A partir de 7	%
16	76'1	5	23'8

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
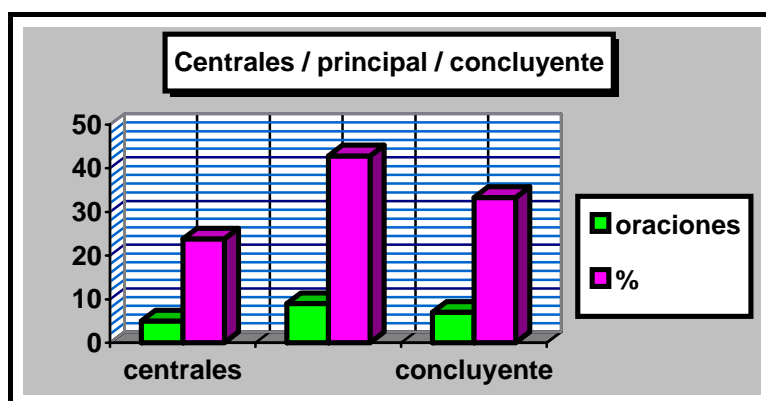
Tipo de oraciones	Nº oraciones	Total	%
Centrales	5	21	23'8
Principal	9	21	42'8
Concluyente	7	21	33'3

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs.	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	176	45	26	0	6	7	12	7	0	0	2	0	281
%	62'6	16	9'2	0	2'1	2'4	4'2	2'4	0	0	0'7	0	99'6

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5. 1. 5. Texto 5: *Refinement of the borohydride reduction method for trace analysis of dissolved and particulate dimethyl sulfoxide in marine water samples***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 6, 8 y 10.[29] Por lo tanto, tendremos en cuenta 4 conexiones como mínimo para establecer las oraciones centrales.

5. 1. 5. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son las siguientes: 6, 8 y 10.

6. When used as part of a sequential protocol, <this technique> [a borohydride reduction method, developed by Simó et al.] allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample.

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **10**. <This information> [the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO (DMSO$_p$)] should be useful for those intending to analyze aqueous DMSO by reduction methods.

5. 1. 5. 2. Resumen del texto a partir de la oración principal 1.

La oración principal es la 3[30] y es una de las que presenta más conexiones con las oraciones posteriores. Las oraciones 3, 6, 8 y 10[31] constituyen un resumen.

3. During the past few years, five methods for trace analysis of aqueous DMSO have been reported. **6**. When used as part of a sequential protocol, <this technique> [a borohydride

_____

[29]   La oración 6 informa de la técnica utilizada por un investigador, que es la que va a emplear el autor de este artículo. La oración 8 presenta el objetivo de la investigación y la técnica aplicada. Por último, la oración 10, que avanza los resultados de la investigación contenidos en la oración 9, informa de la utilidad del estudio realizado.

[30]   Podemos considerarla como la que inicia el tema, ya que informa de la existencia de métodos y justamente el objetivo del autor es presentar la variante de uno de esos métodos.

[31]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

reduction method, developed by Simó et al.] allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample.

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **10**. <This information> [the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO (DMSO$_p$)] should be useful for those intending to analyze aqueous DMSO by reduction methods.

5. 1. 5. 3. Resumen del texto a partir de la oración principal 2.

La oración principal podría ser también la 6[32], que, al igual que la oración 3, presenta más conexiones con las oraciones posteriores. Las oraciones 3, 6, 8, 9 y 10[33] constituyen un resumen.

3. During the past few years, five methods for trace analysis of aqueous DMSO have been reported. **6**. When used as part of a sequential protocol, <this technique> [a borohydride reduction method, developed by Simó et al.] allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample.

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **9**. New insight into the method has been gained, including the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO (DMSO$_p$). **10**. This information should be useful for those intending to analyze aqueous DMSO by reduction methods.

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[32]   Podemos, igualmente, considerarla como oración principal, ya que inicia la descripción del método elegido.
[33]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

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5. 1. 5. 4. Resumen del texto a partir de la oración concluyente 1.

La oración concluyente es la 10^{34} y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 3, 6, 8, 9 y 10 constituyen un resumen. Como podemos observar, este resumen coincide con el ofrecido por la oración principal 2 del apartado anterior.

5. 1. 5. 5. Resumen del texto a partir de la oración concluyente 2.

La oración 8, que expresa el objetivo de la investigación, podría considerarse también como concluyente y es la que, después de la oración 10, presenta más conexiones con las oraciones anteriores. Las oraciones 3, 5, 6, 8, 9 y 10 constituyen un resumen. En este caso, es posible elevar el número de enlaces hasta 5, lo cual nos permite obtener un resumen sólo con las oraciones 6, 8 y 9^{35}.

6. When used as part of a sequential protocol, <this technique> [a borohydride reduction method, developed by Simó et al.] allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample.

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **9**. New insight into the method has been gained, including the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO ($DMSO_p$).

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[34] Podemos considerar esta oración como concluyente, ya que informa de la utilidad de la investigación.
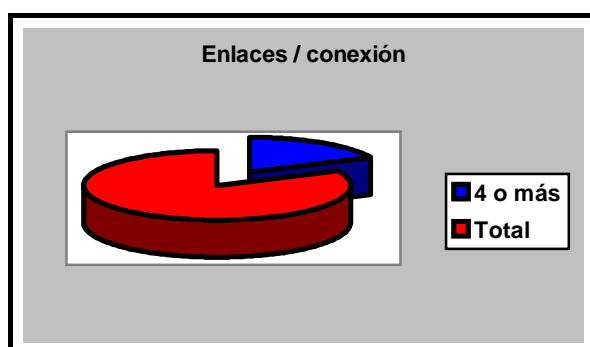
[35] La información de la oración 10, perteneciente al 'cuerpo del texto' está contenida en la 9.

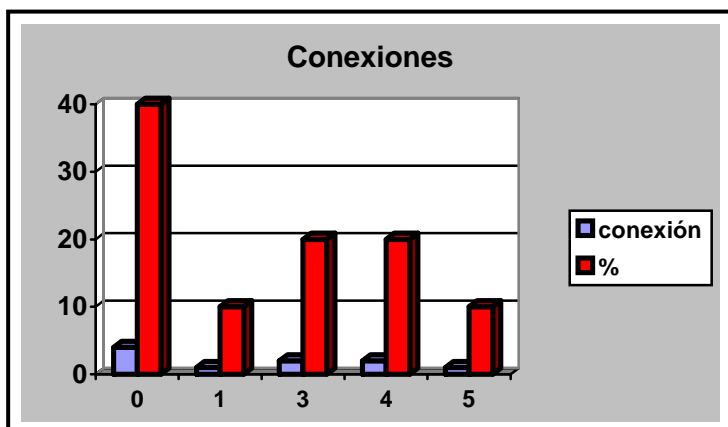1) Gráfica representativa del número de enlaces entre oraciones.
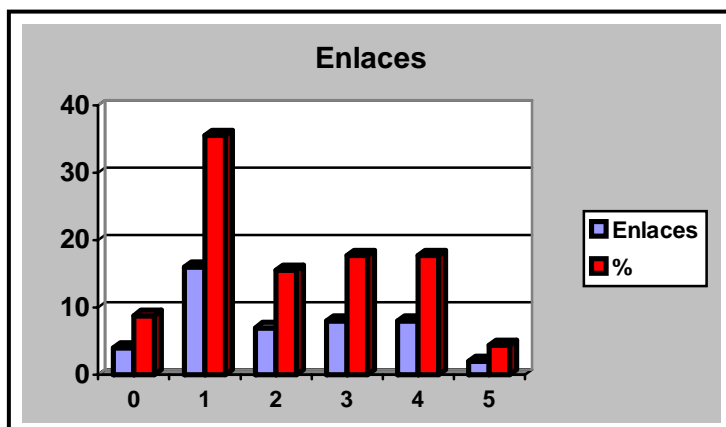
Enlaces

Enlaces	0	1	2	3	4	5	Total
Celdas	4	16	7	8	8	2	45
%	8'8	35'5	15'5	17'5	17'7	4'4	99'4

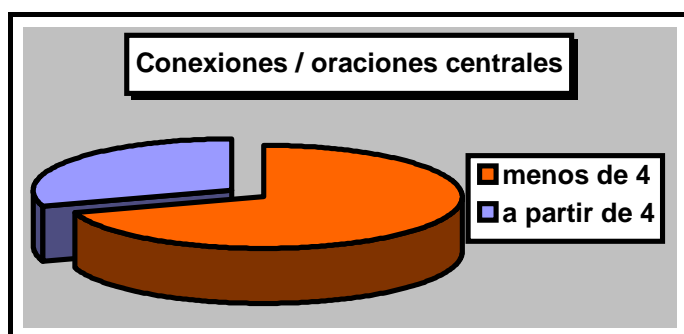2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 4	%	A partir de 4	%
35	77'7	10	22'2

Resultados
_____

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº Conexiones	0	1	3	4	5	Total
Nº Oraciones	4	1	2	2	1	10
%	40	10	20	20	10	100

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 4	%	A partir de 4	%
7	70	3	30

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.
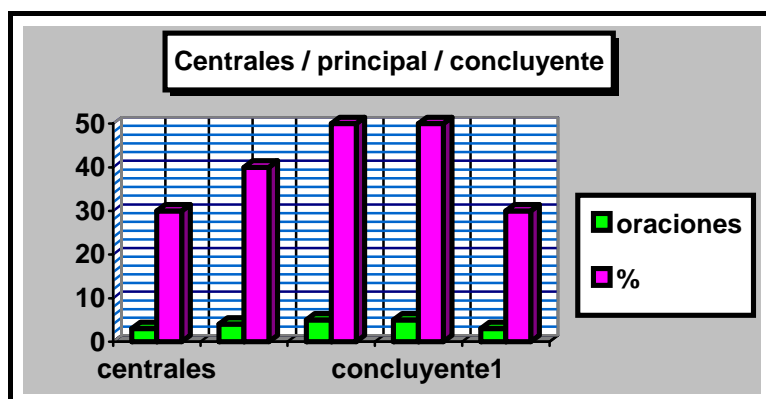
Tipo de oraciones	Nº oraciones	Total	%
Centrales	3	10	30
Principal 1	4	10	40
Principal 2	5	10	50
Concluyente 1	5	10	50
Concluyente 2	3	10	30

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	66	15	6	2	1	5	0	0	1	0	0	0	96
%	68'7	15'6	6'2	2	1	5'2	0	0	1	0	0	0	99'7

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5. 1. 6. Texto 6: *Determination of cyanide in whole blood by capillary gas chromatography with cryogenic oven trapping***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 6, 7, 10 y 13.[36] Tendremos en cuenta 2 conexiones como mínimo para establecer las oraciones centrales.

5. 1. 6. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales serían las siguientes: 4, 5, 6, 7, 8, 9, 10 y 13.[37]

4. For analysis of cyanide, the most classical is a colorimetric method with microdiffusion, fluorometric methods were also reported. **5**. Methods using gas chromatography (GC) with electron capture detection (ECD) and with nitrogen-phosphorus detection (NPD) and mass spectrometry (MS), after suitable derivatizations, were reported. **6**. GC measurements of cyanide with NPD without derivatization were usually made using the headspace (HS) method. **7**. In most of these reports, conventional packed columns, which give relatively low sensitivity and poor separation, were used. **8**. With wide-bore capillary columns, only a 0.5-mL volume of the HS vapor can be injected; with medium-bore capillary columns, split injection giving less than 5% of efficiency has to be used. **9**. Solid-phase microextraction has been applied to analysis of cyanide in human whole blood.

10. Recently, a microcomputer-controlled device for cooling oven temperatures below 0º C has become available for new types of GC instruments.

13. In this paper, we have established a new GC technique using cryogenic oven for measuring cyanide in whole blood without any complicated pre-treatment; as much as 5 mL of the HS vapor for cyanide can be introduced without any loss into a medium-bore capillary column by use of a low oven temperature.

_____

[36] Las oraciones 6 y 7 indican los métodos utilizados y sus desventajas. La oración 10 informa de un avance realizado y la 13 presenta el objetivo de la investigación junto con la técnica aplicada con la incorporación del nuevo avance.

[37] Como podemos observar la introducción de las oraciones 4, 5, 8, 9 no interrumpe el argumento, sino que amplía la información contenida en las oraciones pertenecientes al 'cuerpo del texto'.

5. 1. 6. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 7[38] y es la que establece más enlaces con las oraciones posteriores. Las oraciones 7, 8, 13 y 14[39] constituyen un resumen.

7. In most of ~~these~~ [the] reports, [about fuorometric methods, methods using gas chromatography (GC) with electron capture detection (ECD) and with nitrogen-phosphorus detection (NPD) and mass spectrometry (MS), after suitable derivatizations] conventional packed columns, which give relatively low sensitivity and poor separation, were used. **8**. With wide-bore capillary columns, only a 0.5-mL volume of the HS vapor can be injected; with medium-bore capillary columns, split injection giving less than 5% of efficiency has to be used.

13. In this paper, we have established a new GC technique using cryogenic oven for measuring cyanide in whole blood without any complicated pre-treatment; as much as 5 mL of the HS vapor for cyanide can be introduced without any loss into a medium-bore capillary column by use of a low oven temperature. **14**. This means that 10-100 times higher sensitivity can be obtained by this method as compared with that of the previous methods.

5. 1. 6. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 13[40] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 4, 5, 6, 7, 8, 9, 10 y 13 constituyen un resumen. Este resumen coincide con el ofrecido por las oraciones centrales.

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[38] Pensamos que esta oración es la que introduce el tema, ya que justifica la utilización de la nueva técnica presentada en este artículo, que es, por otro lado, el objetivo del mismo.

[39] Las oraciones 6 y 10, pertenecientes al 'cuerpo del texto', no están presentes en este resumen, por lo que éste contiene el 50% de la información considerada como esencial. No obstante, consideramos válido dicho resumen, ya que presenta detalladamente un aspecto fundamental del escrito: la sensibilidad del método utilizado en esta investigación en comparación con las realizadas anteriormente.

[40] Consideramos que esta oración es la que cierra la introducción, ya que es la que expresa el objetivo del artículo.
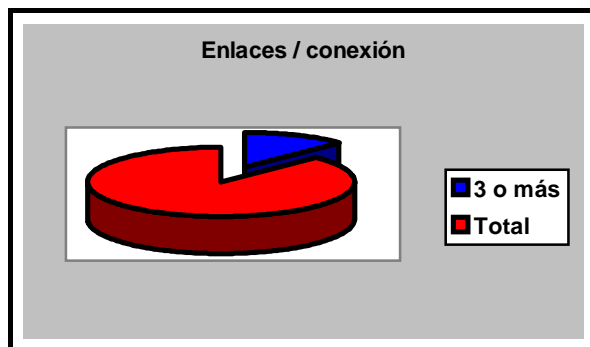
1) Gráfica representativa del número de enlaces entre oraciones.
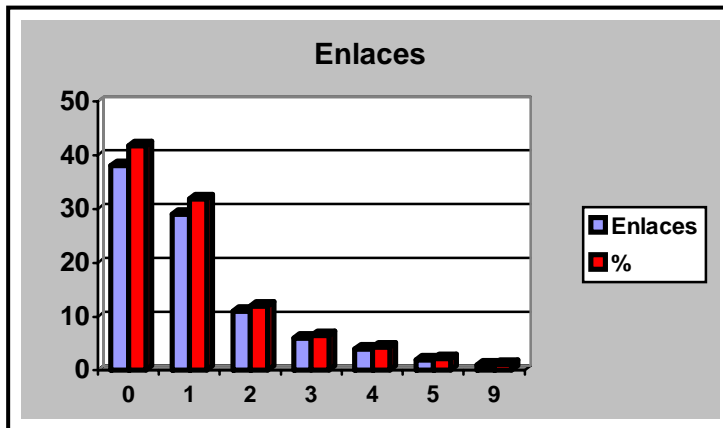
Enlaces

Enlaces	0	1	2	3	4	5	9	Total
Celdas	38	29	11	6	4	2	1	91
%	41'7	31'8	12	6'5	4'4	2'2	1'1	99'7

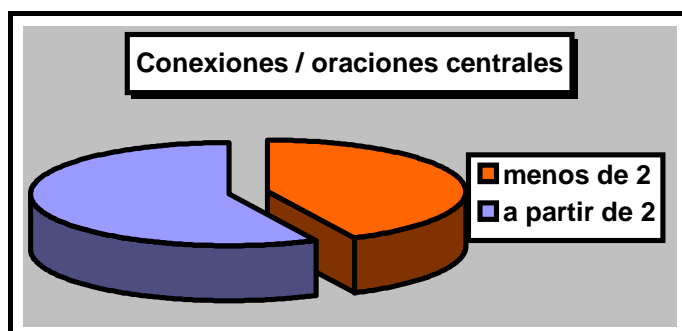2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 3	%	A partir de 3	%
78	85'7	13	14'2

3) Gráfica representativa del número de conexiones y número de oraciones.
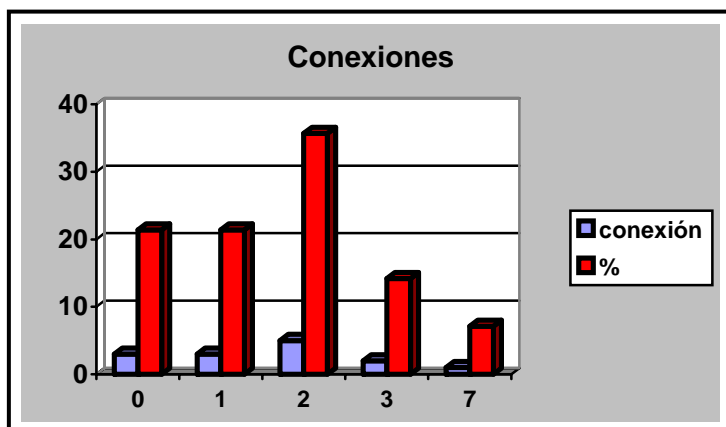
Nº Conexiones	0	1	2	3	7	Total
Nº Oraciones	3	3	5	2	1	14
%	21'4	21'4	35'7	14'2	7'1	99'8

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 2	%	A partir de 2	%
6	42'8	8	57'1

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
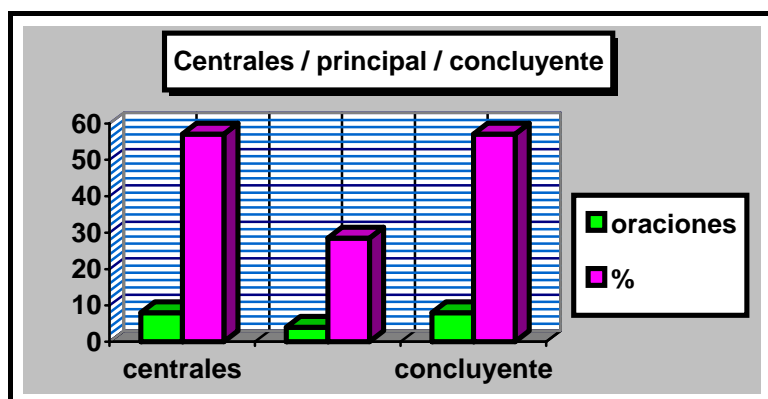
Tipo de oraciones	Nº oraciones	Total	%
Centrales	8	14	57'1
Principal	4	14	28'5
Concluyente	8	14	57'1

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	75	4	11	1	0	11	0	0	1	0	0	1	104
%	72'1	3'8	10'5	0'9	0	10'5	0	0	0'9	0	0	0'9	99'6

5. 1. 7. Texto 7: *RP-HPLC binding domains of proteins***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 7, 11 y 14.[41] Tendremos en cuenta 6 conexiones como mínimo para establecer las oraciones centrales.

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[41] La oración 7 introduce el tema informando de cómo se determina la interacción de las proteínas, objeto del estudio. Las oraciones 11 y 14 especifican la técnica aplicada y metodología de la investigación.

5. 1. 7. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 6, 7, 8, 11 y 14.[42]

6. While little is known about the detailed molecular structure of proteins at the chromatographic surface, experimental data with species variants of proteins, as well recombinant mutants, indicate that proteins interact with the chromatographic surface in an orientation-specific manner. **7**. The retention behavior of proteins, which can be described in terms of the affinity and kinetics of the interaction, is therefore determined by the molecular composition of a specific contact region. **8**. Although the contact region for small peptides may involve contributions from the total or a large proportion of the molecular surface of the solute, for larger polypeptides or proteins, retention data suggest that the contact region represents a relatively small portion of the total solute surface. **11**. Without <this information,> [the location and identity of the specific contact amino acid residues] it is not possible to predict the molecular basis of the retention behavior of a protein, and this limitation constrains the further development of RP-HPLC as a technique to study protein- surface interactions.

14. Following proteolytic digestion and characterization of the derived fragments, the results were correlated with the known three-dimensional structure of <these two proteins> [horse heart cytochrome c Cyt c) and bovine growth hormone (bGH)] and provide insight into the location of the possible contact regions as well as the orientation of these two proteins at the surface of reversed-phase sorbents.

5. 1. 7. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 7 y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 3, 6, 7, 8, 9, 10, 11, 12 y 14[43] constituyen un resumen.

3. <However,> further significant progress in the development of RP-HPLC is impeded by the lack of theoretical models which accurately describe the molecular details of peptide and protein interactions in RP-HPLC.

6. While little is known about the detailed molecular structure of proteins at the chromatographic surface, experimental data with species variants of proteins, as well recombinant mutants, indicate that proteins interact with the chromatographic surface in an

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[42] La introducción de las oraciones 6, 7 y 8 no interrumpe el argumento, sino que amplía la información de las oraciones pertenecientes al 'cuerpo del texto'.

[43] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

orientation-specific manner. **7**. The retention behavior of proteins, which can be describe in terms of the affinity and kinetics of the interaction, is therefore determined by the molecular composition of a specific contact region. **8**. Although the contact region for small peptides may involve contributions from the total or a large proportion of the molecular surface of the solute, for larger polypeptides or proteins, retention data suggest that the contact region represents a relatively small portion of the total solute surface. **9**. The retention properties of larger polypeptides and proteins are therefore determined by the specific contact amino acid residues rather than by the entire amino acid sequence. **10**. However, the location and identity of these chromatographic contact regions of proteins cannot be readily established. **11**. Without this information, it is not possible to predict the molecular basis of the retention behavior of a protein, and this limitation constrains the further development of RP-HPLC as a technique to study protein- surface interactions.

12. To address this problem, procedures have been developed in this study to identify the chromatographic contact regions of proteins when adsorbed to reversed-phase sorbents. **14**. Following proteolytic digestion and characterization of the derived fragments, the results were correlated with the known three-dimensional structure of <~~these two proteins~~> [horse heart cytochrome c Cyt c) and bovine growth hormone (bGH)] and provide insight into the location of the possible contact regions as well as the orientation of these two proteins at the surface of reversed-phase sorbents.

5. 1. 7. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 14[44] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 6, 7, 8, 10, 12, 13 y 14[45] constituyen un resumen.

6. While little is known about the detailed molecular structure of proteins at the chromatographic surface, experimental data with species variants of proteins, as well recombinant mutants, indicate that proteins interact with the chromatographic surface in an orientation-specific manner. **7**. The retention behavior of proteins, which can be describe in terms of the affinity and kinetics of the interaction, is therefore determined by the molecular composition of a specific contact region. **8**. Although the contact region for small peptides may involve contributions from the total or a large proportion of the molecular surface of the solute, for larger polypeptides or proteins, retention data suggest that the contact region represents a

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[44]   Consideramos esta oración como concluyente, ya que avanza los resultados de la investigación.
[45]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto', a excepción de la 11, cuya información está contenida en las oraciones 10 y 12.

relatively small portion of the total solute surface. **10**. <However,> [therefore] the location and identity of these chromatographic contact regions of proteins cannot be readily established.

12. To address this problem, procedures have been developed in this study to identify the chromatographic contact regions of proteins when adsorbed to reversed-phase sorbents. **13**. In particular, proteolytic techniques have been used to probe the surface region of horse heart cytochrome c (Cyt c) and bovine growth hormone (bGH) while adsorbed to an n-butyl (C-4) and n-octadecylsilica (C-18) reversed-phase sorbent. **14**. Following proteolytic digestion and characterization of the derived fragments, the results were correlated with the known three-dimensional structure of these two proteins and provide insight into the location of the possible contact regions as well as the orientation of these two proteins at the surface of reversed-phase sorbents.

1) Gráfica representativa del número de enlaces entre oraciones.
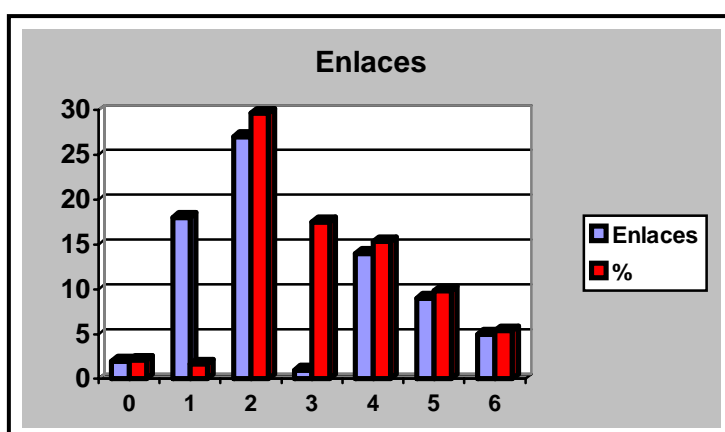
Enlaces	0	1	2	3	4	5	6	Total
Celdas	2	18	27	16	14	9	5	91
%	2'1	19'7	29'6	17'5	15'3	9'8	5'4	99'4

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión
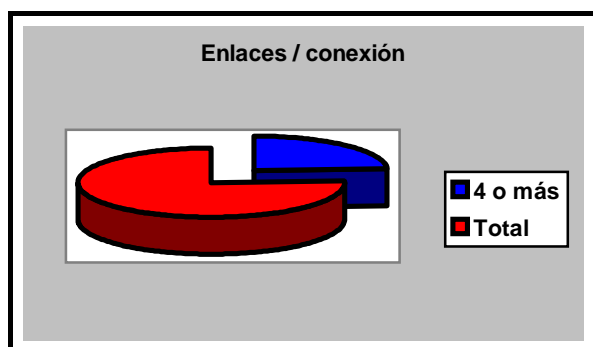
Menos de 4	%	A partir de 4	%
62	68'1	29	31'8

3) Gráfica representativa del número de conexiones y número de oraciones.
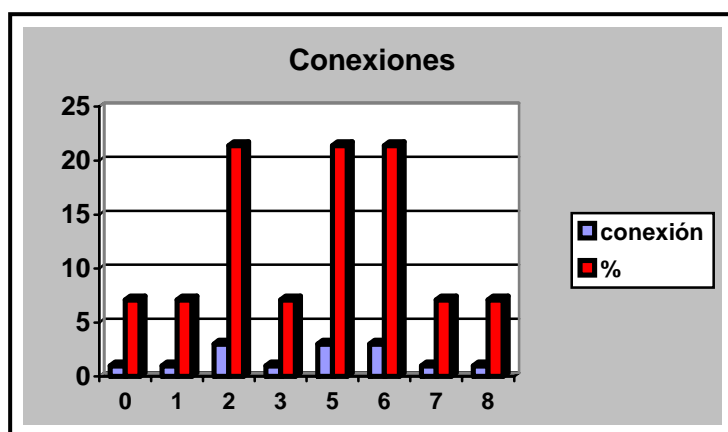
Conexiones

Nº Conexiones	0	1	2	3	5	6	7	8	Total
Nº Oraciones	1	1	3	1	3	3	1	1	14
%	7'1	7'1	21'4	7'1	21'4	21'4	7'1	7'1	99'7

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Conexiones / oraciones centrales

■ menos de 6
■ a partir de 6
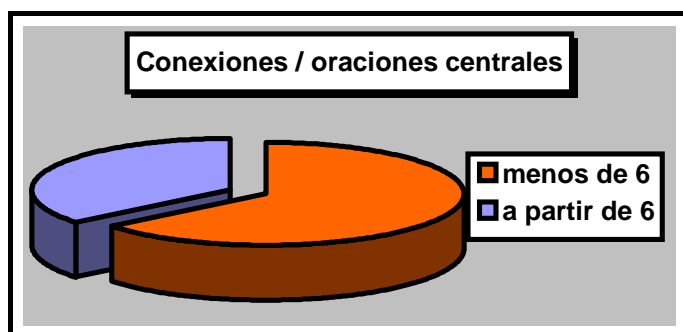
Menos de 6	%	A partir de 6	%
9	64'2	5	35'7

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
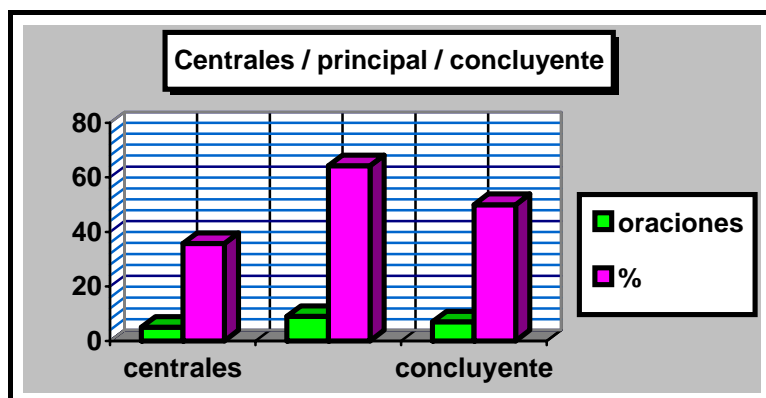
■ oraciones
■ %

Tipo de oraciones	Nº oraciones	Total	%
Centrales	5	14	35'7
Principal	9	14	64'2
Concluyente	7	14	50

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	190	27	12	0	0	2	3	16	0	0	0	2	252
%	75'3	10'7	4'7	0	0	0'7	1,1	6'3	0	0	0	0'7	99'5

5. 1. 8. Texto 8: *Nanoliter chemistry combined with mass spectrometry for peptide mapping of proteins from single mammalian cell lysates*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 5 y 10.[46] Tendremos en cuenta 3 conexiones como mínimo para establecer las oraciones centrales.

5. 1. 8. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 5, 7, 9 y 10.

5. ≤Thus,> analyzing the primary cells isolated from a tissue, instead of a cultured cell line, is the only way to provide a direct correlation of the change in protein contents and identities with a biological event, such as the progression of a disease, without running into a risk of potential artifacts of cell culture. **7**. At present, several tracer techniques involving radiolabeling, immunoassay, and fluorescence tagging have been used to provide information on the distribution of usually known proteins in a small number of cells or a single cell. **9**. However, unequivocal identification and characterization of trace amounts of unknown or modified proteins in very small volumes associated with tissues, single cells, subcellular compartments, and exocytosis still remain a formidable task. **10**. In this report, we describe an analytical approach that combines three rapidly developing techniques, namely, nanoliter or subnanoliter chemistry, matrix-assisted laser desorption/ ionization time-of-flight mass spectrometry (MALDI-TOF MS), and protein database searching, to characterize attomole quantities of proteins from small-volume samples including single cells.

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[46] La oración número 5 introduce y justifica la importancia de la investigación llevada a cabo. La 10 presenta el objetivo del artículo.

5. 1. 8. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 7^{47} y es la que establece más conexiones con las oraciones posteriores. Las oraciones 2, 7, 8, 9 y 10^{48} constituyen un resumen.

2. In cell research, a number of cell lines derived from tumors in in vitro cell culture systems have been used as sources of large numbers of cells of a uniform type and they play an essential role in the process of investigating cell functions.

7. At present, several tracer techniques involving radiolabeling, immunoassay, and fluorescence tagging have been used to provide information on the distribution of usually known proteins in a small number of cells or a single cell. **8**. Miniaturized detection schemes based on electrochemical, laser-induced fluorescence detection and, more recently, mass spectrometry have shown great promise in analyzing cellular components including peptides and proteins in single cells. **9**. However, unequivocal identification and characterization of trace amounts of unknown or modified proteins in very small volumes associated with tissues, single cells, subcellular compartments, and exocytosis still remain a formidable task. **10**. In this report, we describe an analytical approach that combines three rapidly developing techniques, namely, nanoliter or subnanoliter chemistry, matrix-assisted laser desorption/ ionization time-of-flight mass spectrometry (MALDI-TOF MS), and protein database searching, to characterize attomole quantities of proteins from small-volume samples including single cells.

5. 1. 8. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 10^{49} y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 7, 8, 9 y 10 constituyen un resumen. Dicho resumen coincide con el aportado por la oración principal a excepción de la oración 2.

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[47] Consideramos que esta oración es la principal, ya que nos informa sobre las técnicas que se utilizan actualmente, justificando el objetivo del artículo.

[48] La información de la oración 5, perteneciente al 'cuerpo del texto', puede encontrarse en las oraciones 7 y 9.

[49] Consideramos que esta oración es concluyente, ya que es la que presenta el objetivo del artículo.
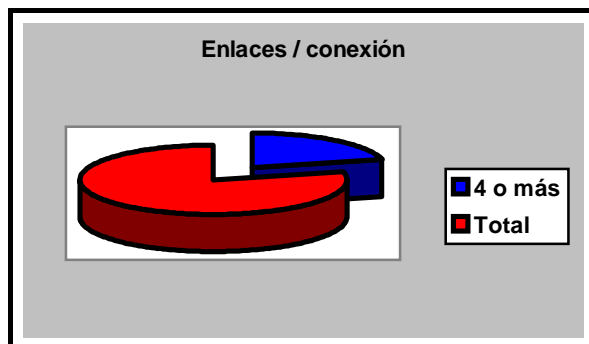
1) Gráfica representativa del número de enlaces entre oraciones:
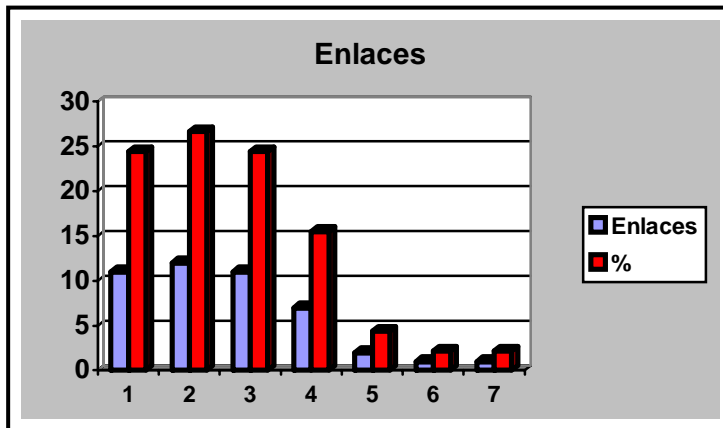
Enlaces

Enlaces	1	2	3	4	5	6	7	Total
Celdas	11	12	11	7	2	1	1	45
%	24'4	26'6	24'4	15'5	4'4	2'2	2'2	99'7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 4	%	A partir de 4	%
33	73'3	12	26'6

3) Gráfica representativa del número de conexiones y número de oraciones.
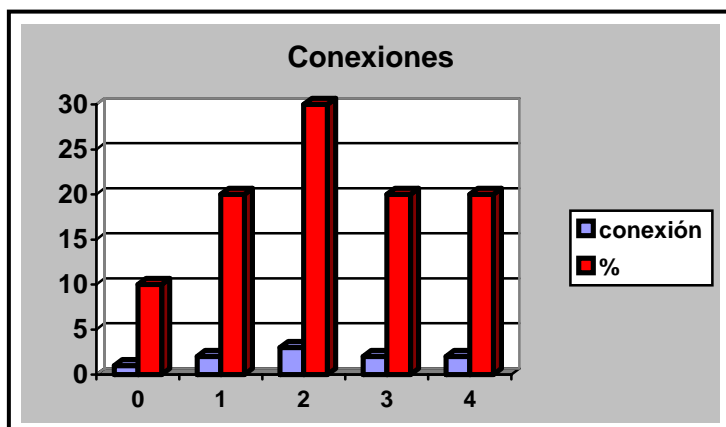
Nº Conexiones	0	1	2	3	4	Total
Nº Oraciones	1	2	3	2	2	10
%	10	20	30	20	20	100

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
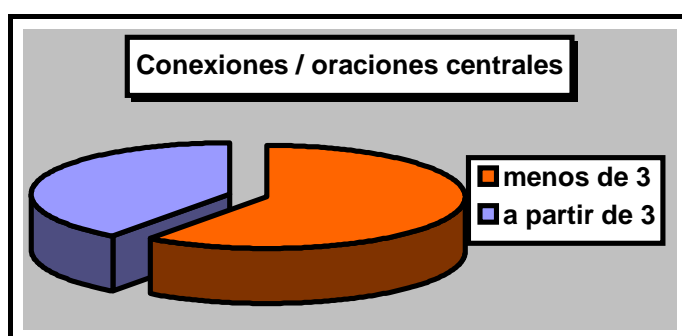
Menos de 3	%	A partir de 3	%
6	60	4	40

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.
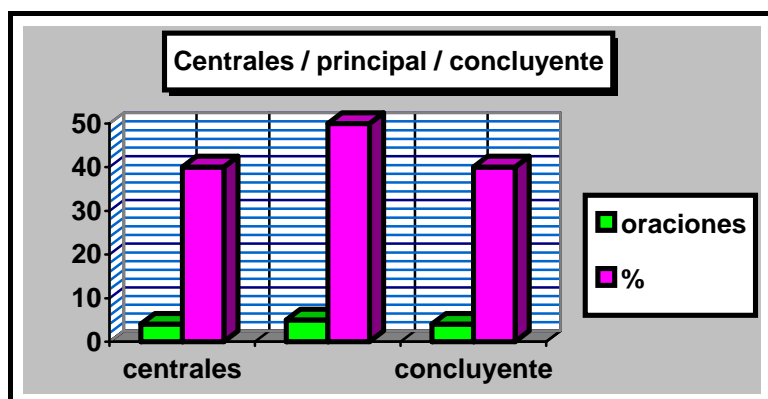
Tipo de oraciones	Nº oraciones	Total	%
Centrales	4	10	40
Principal	5	10	50
Concluyente	4	10	40

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	98	12	6	0	1	4	0	0	0	0	0	2	123
%	79'6	9'7	4'8	0	0'8	3'2	0	0	0	0	0	1'6	99'7

5. 1. 9. Texto 9: *The determination of food colours by HPLC with on-line dialysis for sample preparation*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 7, 16 y 18.[50] Tendremos en cuenta 4 conexiones como mínimo para establecer las oraciones centrales.

_____

[50] Las oraciones 2 y 7 introducen y justifican el tema de la investigación. Las oraciones 16 y 18 indican la metodología aplicada.

5. 1. 9. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 1, 2, 4, 5, 6, 7, 12, 14, 16 y 18.

1. Synthetic colours, mainly azo dyes, have been used in a wide range of food products for many years. **2**. The sensory perception of colour is an important quality attribute and many processed products have been coloured either to replace natural colours destroyed during processing or to provide colour in goods which would otherwise be colourless, as, for example, soft drinks. **4**. The lists of permitted synthetic dyes are progressively being reduced and a number of food processors are relying on the use of natural colours to impart the desired colour to their products. **5**. Unfortunately, many of the natural colours (e.g. anthocyanins, carotenoids and betalaines) do not have the same stability under processing conditions as their synthetic counterparts. **6**. There will always, therefore, be a tendency (or at least a temptation) for some food processors to include synthetic dyes in their products without the correct label designation.

7. There is, therefore, a well-defined need for precise and accurate methods for the determination of synthetic dyes in foods, particularly for the following reasons:

(i)   to determine whether there are synthetic dyes present in foods and if so, whether they are correctly permitted;

(ii)   to determine the levels of such dyes;

(iii)   to confirm the absence of added dyes in foods where they are not declared;

(iv)   to check on the stability of dyes during processing and storage (Damant et al.., 1989).

12. The problem in methods for the quantitative determination of synthetic dyes in foods does not, <therefore,> lie in their separation, but rather in the means for their quantitative isolation from the food matrix. **14**. A milder means of extraction [than adsorption on to wool or polyamide powder], either from the food itself (e.g. soft drinks) or from an aqueous extract of the food, would offer considerable advantages and this is the situation encountered with dialysis. **16**. However, only recently has a fully automated system been made commercially available, which allows considerable flexibility in terms of dialysis conditions, coupled with automated injection of the sample into the HPLC column (Green *et al.,* 1989). **18**. The combination of dialysis and trace enrichment then leads to a complete sample preparation systems for microconstituents of foods, which is marketed under the acronym ASTED (automated sample treatment through enrichment of dialysates).

5. 1. 9. 2. Resumen del texto a partir de la oración principal.

En este texto ninguna de las oraciones que pueden considerarse como principal expande su radio de acción mediante la repetición léxica de forma que puedan ofrecer un resumen del texto.

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5. 1. 9. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 18[51] y es una de las que presenta más conexiones con las oraciones anteriores. Las oraciones 7, 12, 14, 15, 16, 17 y 18[52] constituyen un resumen.

7. There is, <therefore,> a well-defined need for precise and accurate methods for the determination of synthetic dyes in foods, particularly for the following reasons:

  (i)   to determine whether there are synthetic dyes present in foods and if so, whether they are correctly permitted;
  (ii)   to determine the levels of such dyes;
  (iii)   to confirm the absence of added dyes in foods where they are not declared;
  (iv)   to check on the stability of dyes during processing and storage (Damant et al.., 1989).

12. The problem in methods for the quantitative determination of synthetic dyes in foods does not, <therefore,> lie in their separation, but rather in the means for their quantitative isolation from the food matrix. . **14**. A milder means of extraction, [than adsorption on to wool or polyamide powder] either from the food itself (e.g. soft drinks) or from an aqueous extract of the food, would offer considerable advantages and this is the situation encountered with dialysis.

15. This technique has been used as a means of sample preparation for vitamin analysis by HPLC (Nicholson *et al..* 1984). **16**. However, only recently has a fully automated system been made commercially available, which allows considerable flexibility in terms of dialysis conditions, coupled with automated injection of the sample into the HPLC column (Green *et al.,* 1989). **17**. The power of the technique is further extended by allowing enrichment of the determinand in the dialysate on small trace enrichment cartridge prior to elution to the analytical HPLC column. **18**. The combination of dialysis and trace enrichment then leads to a complete sample preparation systems for microconstituents of foods, which is marketed under the acronym ASTED (automated sample treatment through enrichment of dialysates).

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[51]   Esta oración se considera como concluyente, ya que informa de las ventajas de la técnica que se va a utilizar en la investigación.
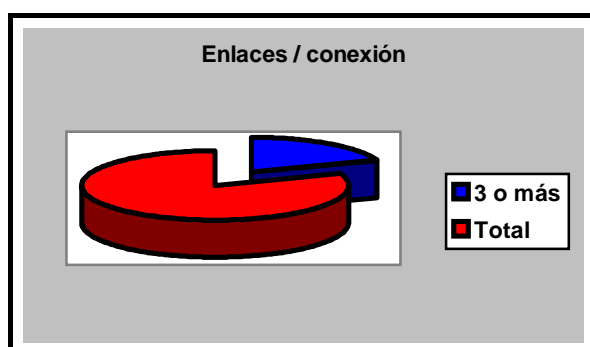[52]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

1) Gráfica representativa del número de enlaces entre oraciones.
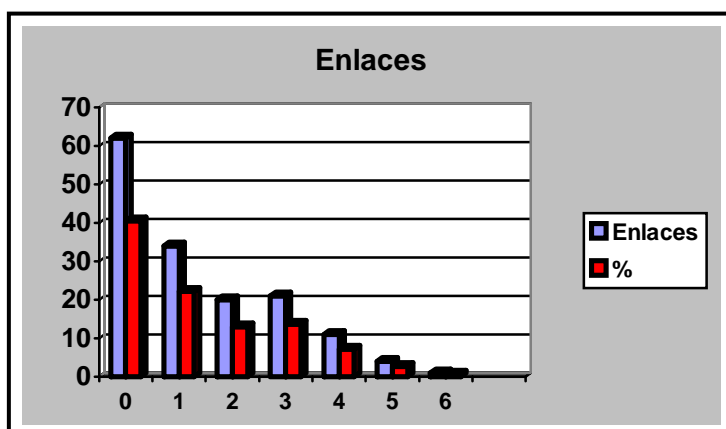
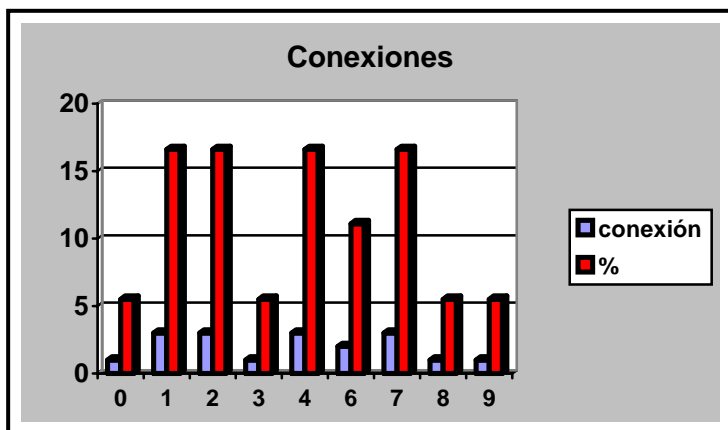| Enlaces	0	1	2	3	4	5	6	Total
Celdas	62	34	20	21	11	4	1	153
%	40'5	22'2	13	13'7	7'1	2'6	0'6	99'7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Menos de 3	%	A partir de 3	%
116	75'8	37	24'1

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº Conexiones	0	1	2	3	4	6	7	8	9	Total
Nº Oraciones	1	3	3	1	3	2	3	1	1	18
%	5'5	16'6	16'6	5'5	16'6	11'1	16'6	5'5	5'5	99'5

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
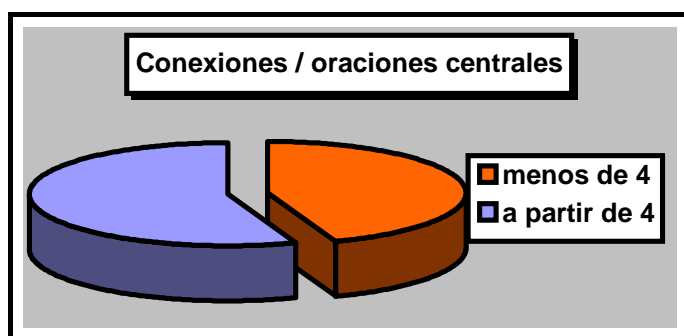
Menos de 4	%	A partir de 4	%
8	44'4	10	55'5

5) Gráfica representativa del número de oraciones que constituyen un resumen del
    texto.
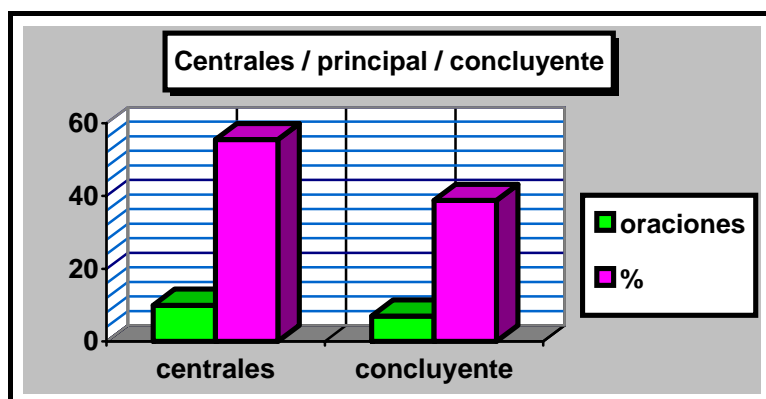
Tipo de oraciones	N° oraciones	Total	%
Centrales	10	18	55'5
Concluyente	7	18	38'8

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	137	10	15	5	6	0	26	1	0	0	1	0	201
%	68'1	4'9	7'4	2'4	2'9	0	12'9	0'5	0	0	0'5	0	99'6

5. 1. 10. Texto 10: *Analysis of serotonin in whole-blood samples – A novel fully automated method***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 8, 12, 14, 15 y 17.[53]
Tendremos en cuenta 5 conexiones como mínimo para establecer las oraciones
centrales.

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[53] La oración 8 introduce y justifica el tema de la investigación. Las oraciones 12, 14 y 15
justifican el método utilizado en la investigación. Por último, la oración 17 indica el objetivo de la misma.

5. 1. 10. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 8, 12, 14, 15 y 17.

8. The analysis of serotonin in whole blood is interesting because the compound is deposited in thrombocytes, which resemble some nerve cells.

12. The current method for measuring serotonin in whole blood or in platelet-enriched plasma requires three steps: adding perchloric acid to the sample, centrifuging it, and injecting some of the supernatant into a high performance liquid chromatography (HPLC) system. **14**. Common off-line SPE does not seem to be the proper choice for analysing serotonin in whole blood. **15**. In the past, analysts have reported that SPE cartridges become clogged with whole blood samples, which caused disturbed flow patterns and provided irreproducible results.

17. In this article, we will describe a method that uses on-line, high pressure SPE for the automated analysis of serotonin in whole-blood samples.

5. 1. 10. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 8 y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 8, 9, 12, 14, 15 y 17[54] constituyen un resumen.

8. The analysis of serotonin in whole blood is interesting because the compound is deposited in thrombocytes, which resemble some nerve cells. **9**. Disturbances in the central nervous system, where serotonin acts, can in some cases be measured indirectly by monitoring the serotonin metabolism in blood.

12. The current method for measuring serotonin in whole blood or in platelet-enriched plasma requires three steps: adding perchloric acid to the sample, centrifuging it, and injecting some of the supernatant into a high performance liquid chromatography (HPLC) system. **14**. Common off-line SPE does not seem to be the proper choice for analysing serotonin in whole blood. **15**. In the past, analysts have reported that SPE cartridges become clogged with whole blood samples, which caused disturbed flow patterns and provided irreproducible results.

17. In this article, we will describe a method that uses on-line, high pressure SPE for the automated analysis of serotonin in whole-blood samples.

_____

[54]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

### 5. 1. 10. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 17[55] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 8, 12, 13 (dudosa)[56], 14, 15, 16 y 17.[57]

8. The analysis of serotonin in whole blood is interesting because the compound is deposited in thrombocytes, which resemble some nerve cells.

12. The current method for measuring serotonin in whole blood or in platelet-enriched plasma requires three steps: adding perchloric acid to the sample, centrifuging it, and injecting some of the supernatant into a high performance liquid chromatography (HPLC) system. **14**. Common off-line SPE does not seem to be the proper choice for analysing serotonin in whole blood. **15**. In the past, analysts have reported that SPE cartridges become clogged with whole blood samples, which caused disturbed flow patterns and provided irreproducible results.

16. On-line, high-pressure SPE is better suited to viscous and complex matrices such as whole blood. **17**. In this article, we will describe a method that uses on-line, high pressure SPE for the automated analysis of serotonin in whole-blood samples.

1) Gráfica representativa del número de enlaces entre oraciones:
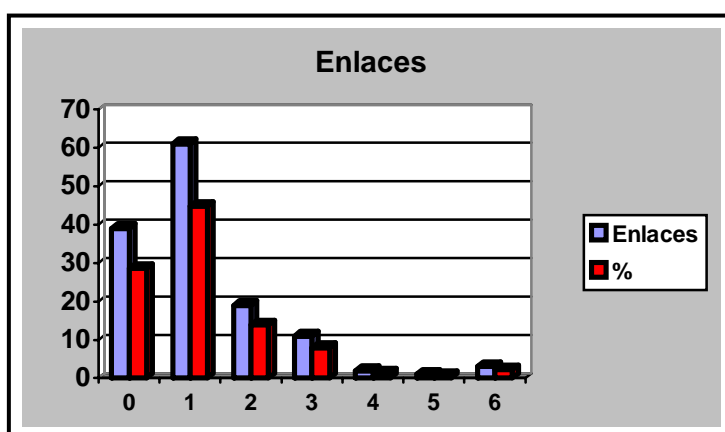
| Enlaces	0	1	2	3	4	5	6	Total
Celdas	39	61	19	11	2	1	3	136
%	28'6	44'8	13'9	8	1'4	0'7	2'2	99'6

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[55] Consideramos esta oración como concluyente, ya que muestra el objetivo del artículo.
[56] La oración 13, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.
[57] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

- 3 o más
- Total
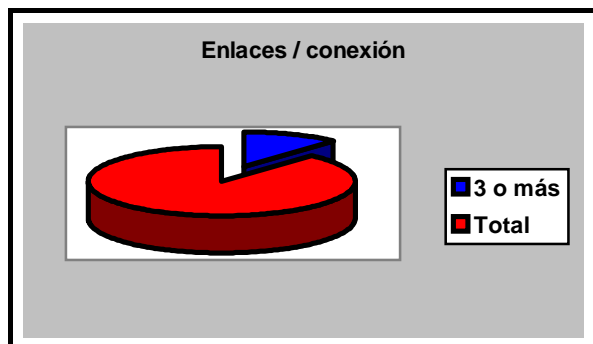
Menos de 3	%	A partir de 3	%
118	86'7	18	13'2

3) Gráfica representativa del número de conexiones y número de oraciones.

Conexiones
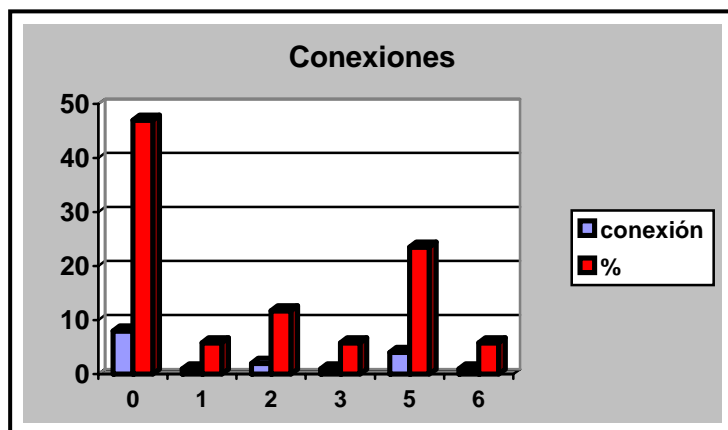
- conexión
- %

Nº Conexiones	0	1	2	3	5	6	Total
Nº Oraciones	8	1	2	1	4	1	17
%	47	5'8	11'7	5'8	23'5	5'8	99'6

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Conexiones / oraciones centrales

■ menos de 5
■ a partir de 5

Menos de 5	%	A partir de 5	%
12	70'5	5	29'4
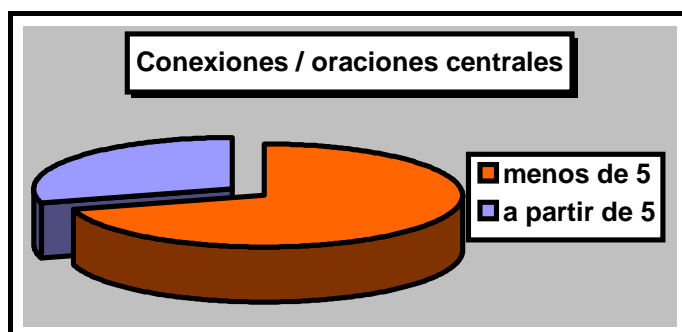
5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
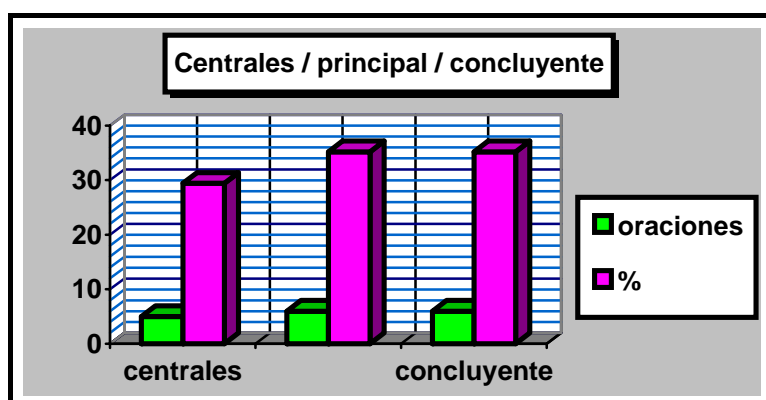
■ oraciones
■ %

Tipo de oraciones	Nº oraciones	Total	%
Centrales	5	17	29'4
Principal	6	17	35'2
Concluyente	6	17	35'2

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	143	6	3	0	2	2	10	0	0	0	2	0	168
%	85'1	3'5	1'7	0	1'1	1'1	5'9	0	0	0	1'1	0	99'5

5. 2. Resúmenes de los artículos 'académicos informales' (AAI).

Presentamos en esta sección los resúmenes, gráficas y tablas correspondientes a los textos pertenecientes al género denominado 'académico-informal'.

5. 2. 1. Texto 1: *Is it real gold*? : Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son las siguientes: 6, 7, 14, 15, 26, 27, 31, 34, 35 y 45.[58] Tomaremos 8 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 1. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 1, 6, 7, 10, 11, 12, 14, 15, 18, 19, 22, 23, 24, 26, 27, 31, 34, 35, 36, 38 y 45.[59]

1. On March 12, 1997, Ann Landers advised a writer to believe her boyfriend, who claimed the necklace he had given her for Christmas was "real gold", despite the fact that it kept turning her neck green.

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[58] El objetivo del autor es demostrar que la pieza de joyería realmente no era de oro. Podemos considerar la oración 6 como la que introduce el tema del escrito, ya que responde al título del mismo. La oración 7 informa del porcentaje de oro que normalmente tiene una joya, mientras que la 14 especifica los metales que se utilizan para dar color. La oración 15 indica que el oro verde, que podría justificar que el cuello de Ann tomara un color verdoso, se utiliza con poca frecuencia. La oración 26 muestra los potenciales por los cuales es posible que los metales utilizados en una aleación de oro se oxiden y concluye en la oración 27, señalando la razón por la que el oro es un metal noble. La oración 31 especifica que sólo el agua regia puede disolver el oro. Las oraciones 34 y 35 señalan que el aire o el sudor sólo pueden oxidar los metales base. Por último, la oración 45 concluye indicando que posiblemente la pieza no fuera de oro.
[59] Podemos observar que la introducción de la oración 1 no interrumpe el argumento. Las oraciones 10, 11 y 12 tampoco lo interrumpen, ya que amplían la información indicando el porcentaje de oro permitido en Gran Bretaña, los metales utilizados en la aleación y que éstos no quedan identificados en la pieza de joyería. Las oraciones 18 y 19 indican cómo se realizan las pruebas con el agua regia. Las oraciones 22, 23 y 24 vuelven a insistir en que no es posible saber con exactitud la identidad de los otros metales utilizados en una pieza de oro. Por último, las oraciones 36 y 38 amplían la información indicando la razón por la que el oro, la plata y el cobre son menos reactivos y confirmando que el níquel es el que produce una reacción alérgica.

6. The gift necklace was surely not "pure" in a chemical sense, because 100%, or 24 carat gold (also spelled "karat", and always marked as "K") is too soft to be practical for use in jewelry. **7**. Jewelry is usually made of 18 or 14 carat gold, whose weight fraction of gold is 18/24 or 14/24, respectively. **10**. In Britain, items that are only 9K can be sold, but there is no margin for error on the low side; France's lowest carat designation is 18K. **11**. The rest of the material in the alloy can be a variety of other metals; those most often used are copper, nickel, or silver. **12**. The composition of the alloy is not disclosed in the "carat" marking, and different alloying metals are used to make different colors.

14. The metals used to make different colors are usually:
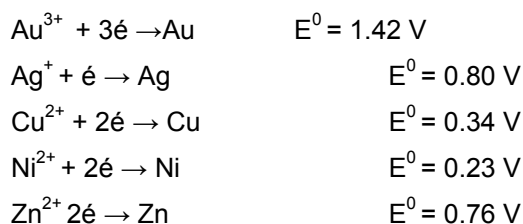
Yellow: Au, Cu, Ag, Zn

White: Au, Cu, Ni, Zn

Red: Au, Cu

Green: Au, Ag

15. The alloy called "green gold" (which is only slightly greenish) is rarely used, so the boyfriend of Ann Landers' correspondent was most likely claiming that the gift necklace was one of the recognized alloys whose minimum gold content has been designated in Britain by Hallmarks and there and elsewhere by the carat system.

18. Compositions up to 18 carat gold alloy can be tested with aqua regia (a mixture of nitric and hydrochloric acid, in roughly equal proportions); the small spot subjected to the acid will immediately become pale yellow, as the base metals that provide some of the color are dissolved. **19**. Instead of risking damage to the piece of yewelry, tests were often done using a "touchstone", a hard, black, slightly abrasive stone on which the object was rubbed fairly firmly, wiping a small amount of metal onto the stone surface.

22. A perceptive chemist will recognize that the carat marking specifies the minimum weight percentage of gold (only), but neither the identity nor the concentration of the other parts of the alloy. **23**. This means that an 18 carat gold item could have from zero to 25 weight percent copper, which corresponds to zero to 51 mole percent copper. **24**. Mixtures involving nickel and zinc result in about the same mole fraction of the base metals because of the similarity of their average atomic masses to that of copper.

26. For the principal elements of the gold alloys, the pertinent numbers [of the standard potential] are:

$$Au^{3+} + 3\acute{e} \rightarrow Au \qquad E^0 = 1.42 \text{ V}$$
$$Ag^+ + \acute{e} \rightarrow Ag \qquad E^0 = 0.80 \text{ V}$$
$$Cu^{2+} + 2\acute{e} \rightarrow Cu \qquad E^0 = 0.34 \text{ V}$$
$$Ni^{2+} + 2\acute{e} \rightarrow Ni \qquad E^0 = 0.23 \text{ V}$$
$$Zn^{2+}\, 2\acute{e} \rightarrow Zn \qquad E^0 = 0.76 \text{ V}$$

27. These data suggest why gold is a "noble" metal: the potential required to oxidize it is near the maximum available in aqueous solutions. **31**. One must also consider that the metal

ion may be stabilized in solution by formation of a complex ion, which is the reason why both the nitric acid oxidant and the hydrochloric acid complexing agent are required when aqua regia (literally, royal water – a phrase coined by alchemists to designate a solvent for "noble" metals) dissolves gold.

34. Oxidation by ordinary air (or air contaminated by sulfides) can tarnish silver, copper, and nickel, but pure gold is impervious to attack, even by concentrated nitric or hydrochloric acid acting independently. **35**. The chloride ion in a person's perspiration can facilitate the oxidation of the base metals in a gold jewelry alloy. **36**. But another factor impacting on whether these metals are leached out of necklaces, earrings, or dental work is the fact that mixtures of gold, silver, and copper with other metals are less reactive than one would predict if their alloys were ideal solutions.

38. When people experience an allergic reaction to "real gold" jewelry, it is almost always one of the base metals that is the culprit, and nickel is by far the most notorious in this respect. **45**. It is much more likely that the boyfriend had passed off a gold-plated necklace as more expensive jewelry.

5. 2. 1. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 6 y es una de las que presenta más conexiones con las oraciones posteriores. Sin embargo, no ofrece un resumen del texto, ya que aporta información exhaustiva de la primera parte del texto, pero no informa de los diferentes metales que se utilizan en la confección de una pieza de joyería, del porqué el oro no se oxida y qué puede oxidar los metales base.

5. 2. 1. 3. Resumen del texto a partir de la 'oración circular' principal.

La oración 18,[60] sin que pueda considerarse como principal, es una de las que presenta más conexiones con las oraciones posteriores. Las oraciones 1, 6, 7, 10, 12, 14, 15, 16, 17, 18, 19, 22, 23, 24, 29, 31, 32, 33, 34, 35, 36, 38, 44 y 45 constituyen un resumen. En este caso es posible elevar el número de enlaces hasta 4, lo cual nos

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[60] No puede considerarse como la que inicia el tema, pero sí la que introduce la parte del texto que demuestra que la pieza no era realmente de oro.
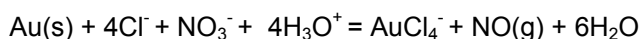
permite obtener un resumen con las oraciones: 6, 7, 12, 15, 16, 18, 19, 23, 29, 31, 32, 34, 35, 36, 38 y 44.[61]

6. The gift necklace [Ann Landres' boyfriend gave her for Christmas and which kept turning her neck green] was surely not "pure" in a chemical sense, because 100%, or 24 carat gold (also spelled "karat", and always marked as "K") is too soft to be practical for use in jewelry. **7**. Jewelry is usually made of 18 or 14 carat gold, whose weight fraction of gold is 18/24 or 14/24, respectively. **12**. The composition of the alloy is not disclosed in the "carat" marking, and different alloying metals are used to make different colors.

15. The alloy called "green gold" (which is only slightly greenish) is rarely used, so the boyfriend of Ann Landers' correspondent was most likely claiming that the gift necklace was one of the recognized alloys whose minimum gold content has been designated in Britain by Hallmarks and there and elsewhere by the carat system.

16. The common phrase "acid text" comes from the practice of testing gold alloys with nitric acid. **18**. Compositions up to 18 carat gold alloy can be tested with aqua regia (a mixture of nitric and hydrochloric acid, in roughly equal proportions); the small spot subjected to the acid will immediately become pale yellow, as the base metals that provide some of the color are dissolved. **19**. Instead of risking damage to the piece of yewelry, tests were often done using a "touchstone", a hard, black, slightly abrasive stone on which the object was rubbed fairly firmly, wiping a small amount of metal onto the stone surface.

23. <~~This means~~> [the carat marking specifies the minimum weight percentage of gold (only), but neither the identity nor the concentration of the other parts of the alloy meaning] that an 18 carat gold item could have from zero to 25 weight percent copper, which corresponds to zero to 51 mole percent copper. **29**. It is obvious that nitric acid will not oxidize gold but will easily oxidize copper. **31**. One must also consider that the metal ion may be stabilized in solution by formation of a complex ion, which is the reason why both the nitric acid oxidant and the hydrochloric acid complexing agent are required when aqua regia (literally, royal water – a phrase coined by alchemists to designate a solvent for "noble" metals) dissolves gold. **32**. When gold is dissolved in aqua regia, the reaction is:

$$Au(s) + 4Cl^- + NO_3^- + 4H_3O^+ = AuCl_4^- + NO(g) + 6H_2O$$

34. Oxidation by ordinary air (or air contaminated by sulfides) can tarnish silver, copper, and nickel, but pure gold is impervious to attack, even by concentrated nitric or hydrochloric acid

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[61] No está presente la oración 14, perteneciente al 'cuerpo del texto', pero sí la oración 12, que informa de manera superficial que pueden utilizarse diferentes metales para dar color. Igualmente, las oraciones 26 y 27, pertenecientes al 'cuerpo el texto', tampoco aparecen, pero sí la oración 29 que afirma que el ácido nítrico no oxida el oro. Por último, la oración 44 contiene la información de la 45, perteneciente al 'cuerpo del texto'.

acting independently. **35**. The chloride ion in a person's perspiration can facilitate the oxidation of the base metals in a gold jewelry alloy. **36**. But another factor impacting on whether these metals are leached out of necklaces, earrings, or dental work is the fact that mixtures of gold, silver, and copper with other metals are less reactive than one would predict if their alloys were ideal solutions.

38. When people experience an allergic reaction to "real gold" jewelry, it is almost always one of the base metals that is the culprit, and nickel is by far the most notorious in this respect.

44. If it were "real" 14K or 18K, it is unlikely that a person who does not sweat aqua regia would develop a green neck.

5. 2. 1. 4. Resumen del texto a partir de la oración concluyente.

Podríamos considerar las oraciones 44 o 45 como las que cierran el tema. Sin embargo, ninguna de las dos ofrece un resumen del texto.

5. 2. 1. 5. Resumen del texto a partir de la 'oración circular' concluyente.

La oración circular concluyente es la 36[62] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 6, 11, 14, 15, 18, 19, 23, 24, 26, 27, 31, 32, 34, 35, 36, 38, 39, 45 y 46[63] constituyen un resumen.

6. The gift necklace [Ann Landers' boyfriend gave her for Christmas and which kept turning her neck green] was surely not "pure" in a chemical sense, because 100%, or 24 carat gold (also spelled "karat", and always marked as "K") is too soft to be practical for use in jewelry. **11**. The rest of the material in the alloy can be a variety of other metals; those most often used are copper, nickel, or silver.

14. The metals used to make different colors are usually:

Yellow: Au, Cu, Ag, Zn

White: Au, Cu, Ni, Zn

Red: Au, Cu

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[62] En nuestra opinión esta oración no es concluyente ni del tema en general ni de ninguna parte del texto. Sin embargo, expande su radio de acción y ofrece un resumen del texto original.

[63] A excepción de la oración número 7, cuya información se puede extraer de la 11, todas las demás oraciones pertenecientes al 'cuerpo del texto' están incluidas en este resumen.
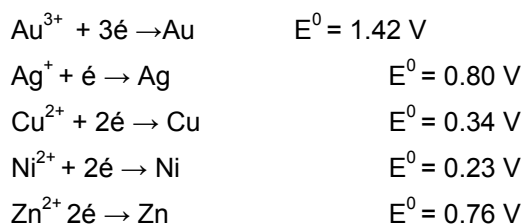
Green: Au, Ag

15. The alloy called "green gold" (which is only slightly greenish) is rarely used, so the boyfriend of Ann Landers' correspondent was most likely claiming that the gift necklace was one of the recognized alloys whose minimum gold content has been designated in Britain by Hallmarks and there and elsewhere by the carat system.
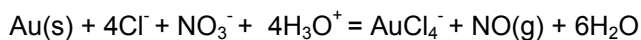
18. Compositions up to 18 carat gold alloy can be tested with aqua regia (a mixture of nitric and hydrochloric acid, in roughly equal proportions); the small spot subjected to the acid will immediately become pale yellow, as the base metals that provide some of the color are dissolved. **19**. Instead of risking damage to the piece of yewelry, tests were often done using a "touchstone", a hard, black, slightly abrasive stone on which the object was rubbed fairly firmly, wiping a small amount of metal onto the stone surface.

23. The carat marking specifies the minimum weight percentage of gold (only), but neither the identity nor the concentration of the other parts of the alloy, meaning that an 18 carat gold item could have from zero to 25 weight percent copper, which corresponds to zero to 51 mole percent copper. **24**. Mixtures involving nickel and zinc result in about the same mole fraction of the base metals because of the similarity of their average atomic masses to that of copper.

26. For the principal elements of the gold alloys, the pertinent numbers are:

$$Au^{3+} + 3é \rightarrow Au \qquad E^0 = 1.42 \text{ V}$$
$$Ag^+ + é \rightarrow Ag \qquad E^0 = 0.80 \text{ V}$$
$$Cu^{2+} + 2é \rightarrow Cu \qquad E^0 = 0.34 \text{ V}$$
$$Ni^{2+} + 2é \rightarrow Ni \qquad E^0 = 0.23 \text{ V}$$
$$Zn^{2+} 2é \rightarrow Zn \qquad E^0 = 0.76 \text{ V}$$

27. These data suggest why gold is a "noble" metal: the potential required to oxidize it is near the maximum available in aqueous solutions. **31**. One must also consider that the metal ion may be stabilized in solution by formation of a complex ion, which is the reason why both the nitric acid oxidant and the hydrochloric acid complexing agent are required when aqua regia (literally, royal water – a phrase coined by alchemists to designate a solvent for "noble" metals) dissolves gold. **32**. When gold is dissolved in aqua regia, the reaction is:

$$Au(s) + 4Cl^- + NO_3^- + 4H_3O^+ = AuCl_4^- + NO(g) + 6H_2O$$

34. Oxidation by ordinary air (or air contaminated by sulfides) can tarnish silver, copper, and nickel, but pure gold is impervious to attack, even by concentrated nitric or hydrochloric acid acting independently. **35**. The chloride ion in a person's perspiration can facilitate the oxidation of the base metals in a gold jewelry alloy. **36**. But another factor impacting on whether these metals are leached out of necklaces, earrings, or dental work is the fact that mixtures of gold, silver, and copper with other metals are less reactive than one would predict if their alloys were ideal solutions.

38. When people experience an allergic reaction to "real gold" jewelry, it is almost always one of the base metals that is the culprit, and nickel is by far the most notorious in this respect. **39**. It seems that some people develop an amazingly acute sensitivity to this metal, and this most often occurs after ears are pierced and gold-plated earrings are inserted.

45. It is much more likely that the boyfriend had passed off a gold-plated necklace as more expensive jewelry. **46**. If some misrepresentation occurred in this case, Georgius Agricola reminds us that it was not the fault of the element: "if by means of gold and silver and gems men can overcome the chastity of women, corrupt the honour of many people, bribe the course of justice and commit innumerable wickednesses, it is not the metals which are to be blamed, but the evil passions of men which become inflamed and ignited"

1) Gráfica representativa del número de enlaces entre oraciones.
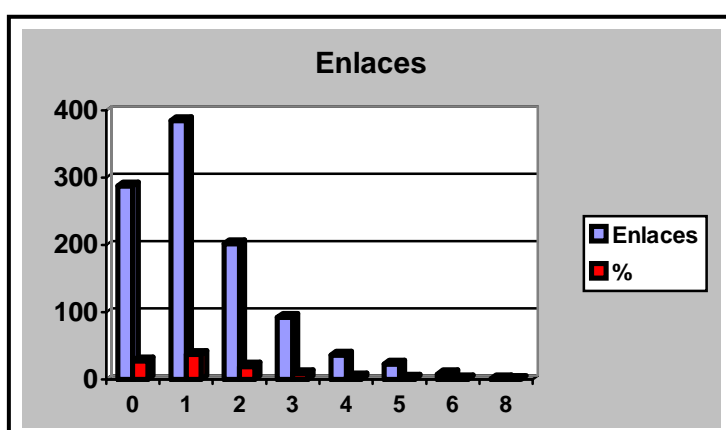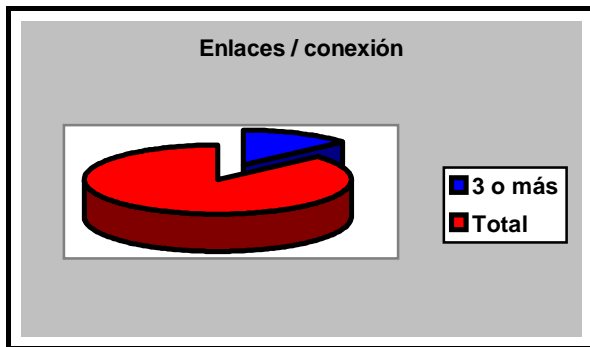

Enlaces	0	1	2	3	4	5	6	8	Total
Celdas	288	385	202	92	36	23	8	1	1035
%	27'8	37'1	19'5	8'8	3'4	2'2	0'7	0'09	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 3	%	A partir de 3	%
875	84'5	160	15'4

3) Gráfica representativa del número de conexiones y número de oraciones.
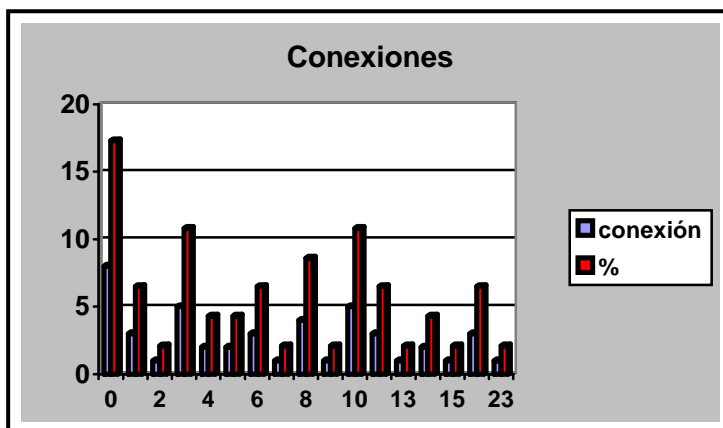
Conexiones

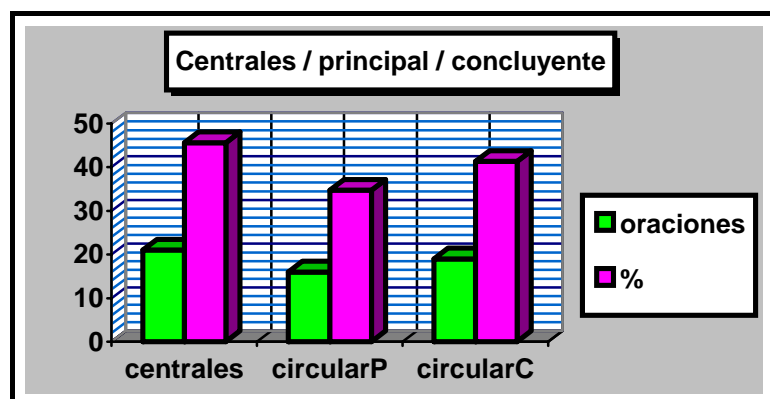| Nº Conexiones	Nº Oraciones	%
0	8	17'3
1	3	6'5
2	1	2'1
3	5	10'8
4	2	4'3
5	2	4'3
6	3	6'5
7	1	2'1
8	4	8'6
9	1	2'1
10	5	10'8
11	3	6'5
13	1	2'1
14	2	4'3
15	1	2'1
18	3	6'5
23	1	2'1
Total	46	99

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
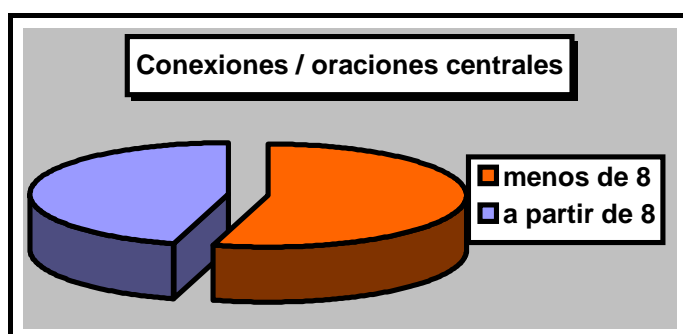
Menos de 8	%	A partir de 8	%
25	54'3	21	45'6

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Tipo de oraciones	Nº oraciones	Total	%
Centrales	21	46	45'6
Circular P	16	46	34'7
Circular C	19	46	41'3

6) Tabla representativa de los tipos de reiteración léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	S	co-ref	e	d	Total
Número	849	64	98	7	0	4	88	258	4	0	3	5	1380
%	61'5	4'6	7'1	0'5	0	0'2	6'3	18'6	0'2	0	0'2	0'3	99'5

5. 2. 2. Texto 2: *Why gold and copper are colored but silver is not***: Oraciones pertenecientes al 'cuerpo del texto'.**

Las oraciones pertenecientes al 'cuerpo del texto' son: 3, 6, 7, 8 y 16[64]. Tendremos en cuenta 9 conexiones como mínimo para establecer las oraciones centrales.

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[64] El objetivo del escritor queda reflejado en el título: la razón por la que el oro y el cobre son amarillos y la plata no. La oración 3 introduce el tema indicándonos la razón por la que el cobre y el oro son amarillos. Las oraciones 6, 7 y 8 explican las características de la plata, las cuales le impiden ser coloreada. Por último, la oración 16 informa de las condiciones necesarias para que un metal sea amarillo.

_____

5. 2. 2. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 3, 6, 7, 8, 15, 16 y 17[65].

3. White light reflects on most metals without color absorption or change to the naked eye; but copper and gold are yellow because they absorb "blue" and "red" photons by electron transitions between spectromeric configurations $ns^1(n\text{-}1)d^{10}$ $ns^2(n - 1)d^9$ of external sublevels.

6. The atomic radius of silver is 16.6 pm larger than that of copper, allowing a bigger difference between sublevels s and d, which is sufficient to restrict the transition $s^1 d^{10}$ $s^2 d^9$ to a lower probability. **7**. This is equally supported by the first ionization energy: since it is lower in silver, the fact that one external electron is ejected more easily than in copper atoms is justified.

8. With their higher nuclear charge (35 vs 25) silver atoms also have larger radii (= 16.6 pm), and the distance between external sublevels-both spatial and energetic-is too large to freely allow s   d transitions.

15. <As a result,> [As] the probability of transition between sublevels is similar to that of copper, <and> gold is <again> yellow.

16. We can now perceive the necessary conditions for a metal to be yellow, like copper and gold:

1. Adequate external electronic configuration $s^1 d^{10}$ $s^2 d^9$ (group 11, IB).

2. Sublevels s and d close enough to allow transitions $s^1 d^{10}$ $s^2 d^9$ to occur significantly (Cu, Au).

17. In contrast, all other metals shine silvery, colorless to the naked eye because they do not possess the necessary electronic external configuration and transition probability to appear colored.

_____

[65]   La introducción de la oración 15 no interrumpe el argumento, sino que reitera la similitud entre el oro y el cobre señalada en la oración 3. La oración 17 tampoco interrumpe el argumento, ya es una paráfrasis de la oración 16.

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5. 2. 2. 2. **Resumen del texto a partir de la oración principal**.

La oración principal es la 3[66] y es la que establece más conexiones con las oraciones posteriores. Las oraciones 2, 3, 4, 6, 7, 8, 9, 14, 15, 16, 17 y 18[67] constituyen un resumen.

2. When polished, all metals shine owing to reflection of photons by external valence electrons dynamically forming metallic bonds. **3**. White light reflects on most metals without color absorption or change to the naked eye; but copper and gold are yellow because they absorb "blue" and "red" photons by electron transitions between spectromeric configurations $ns^1(n\text{-}1)d^{10}$ $ns^2(n\text{-}1)d^9$ of external sublevels.

4. The next question is why silver, with the same external electronic configuration as copper and gold (group 11, IB), is not yellow.

6. The atomic radius of silver is 16.6 pm larger than that of copper, allowing a bigger difference between sublevels s and d, which is sufficient to restrict the transition $s^1 d^{10}$ $s^2 d^9$ to a lower probability. **7**. This is equally supported by the first ionization energy: since it is lower in silver, the fact that one external electron is ejected more easily than in copper atoms is justified.

8. With their higher nuclear charge (35 vs 25) silver atoms also have larger radii (= 16.6 pm), and the distance between external sublevels-both spatial and energetic-is too large to freely allow s   d   transitions. **9**. However, the distance is not large enough to prevent the transitions completely, and after several reflections on two parallel silver mirrors, white light becomes pale yellow.

14. <~~Thus,~~> external s and d sublevels [in gold atoms] are close enough to allow the necessary transition. **15**. As a result, the probability of transition between sublevels is similar to that of copper, and gold is again yellow.

16. We can now perceive the necessary conditions for a metal to be yellow, like copper and gold:

1. Adequate external electronic configuration s^1d^{10} s^2d^9 (group 11, IB).

2. Sublevels s and d close enough to allow transitions s^1d^{10} s^2d^9 to occur significantly (Cu, Au).

17. In contrast, all other metals shine silvery, colorless to the naked eye because they do not possess the necessary electronic external configuration and transition probability to appear colored.

_____

[66]   Se puede considerar esta oración como principal, ya que presenta la generalidad de la ausencia de color en la mayoría de los metales e introduce la razón por la que el oro y el cobre son una excepción.

[67]   Este resumen contiene las oraciones del 'cuerpo del texto'. La inclusión de la oración 18, que termina en interrogación, no interrumpe el argumento, sino que sugiere, como en el texto original, la necesidad de investigaciones futuras sobre el tema.

18. Much work has been undertaken in connection with relativistic effects on metal properties (6); however a final question remains: are metals (except for Cu and Au) really colorless?

5. 2. 2. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 17[68] y es la que establece más conexiones con las oraciones anteriores. Las oraciones 2, 3, 4, 6, 7, 8, 9, 14, 15, 16 y 17[69] constituyen un resumen.

2. When polished, all metals shine owing to reflection of photons by external valence electrons dynamically forming metallic bonds. **3**. White light reflects on most metals without color absorption or change to the naked eye; but copper and gold are yellow because they absorb "blue" and "red" photons by electron transitions between spectromeric configurations $ns^1(n\text{-}1)d^{10}$ $ns^2(n\text{ - }1)d^9$ of external sublevels.

4. The next question is why silver, with the same external electronic configuration as copper and gold (group 11, IB), is not yellow.

6. The atomic radius of silver is 16.6 pm larger than that of copper, allowing a bigger difference between sublevels s and d, which is sufficient to restrict the transition $s^1 d^{10}$ $s^2 d^9$ to a lower probability. **7**. This is equally supported by the first ionization energry: since it is lower in silver, the fact that one external electron is ejected more easily than in copper atoms is justified.

8. With their higher nuclear charge (35 vs 25) silver atoms also have larger radii (= 16.6 pm), and the distance between external sublevels-both spatial and energetic-is too large to freely allow s   d transitions. **9**. However, the distance is not large enough to prevent the transitions completely, and after several reflections on two parallel silver mirrors, white light becomes pale yellow.

14. <Thus,> external s and d sublevels [in gold atoms] are close enough to allow the necessary transition. **15**. As a result, the probability of transition between sublevels is similar to that of copper, and gold is again yellow.

16. We can now perceive the necessary conditions for a metal to be yellow, like copper and gold:

1. Adequate external electronic configuration s^1d^{10} s^2d^9 (group 11, IB).

2. Sublevels s and d close enough to allow transitions s^1d^{10} s^2d^9 to occur significantly (Cu, Au).

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[68]   Se puede considerar esta oración como concluyente, ya que resume la razón por la que la mayoría de los metales carecen de color y, de esta forma, el escritor termina su argumento.
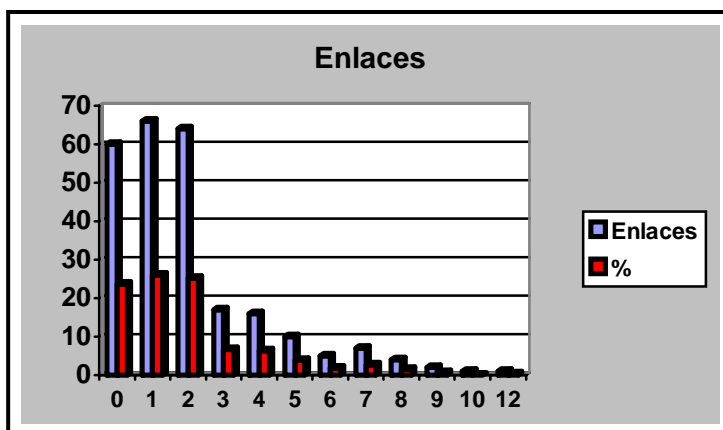[69]   Este resumen contiene las oraciones del 'cuerpo del texto'.

17. In contrast, all other metals shine silvery, colorless to the naked eye because they do not possess the necessary electronic external configuration and transition probability to appear colored.

1) Gráfica representativa del número de enlaces entre oraciones.

Enlaces	0	1	2	3	4	5	6	7	8	9	10	12	Total
Celdas	60	66	64	17	16	10	5	7	4	2	1	1	253
%	23'7	26	25'2	6'7	6'3	3'9	1'9	2'7	1'5	0'7	0'3	0'3	99'2

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.
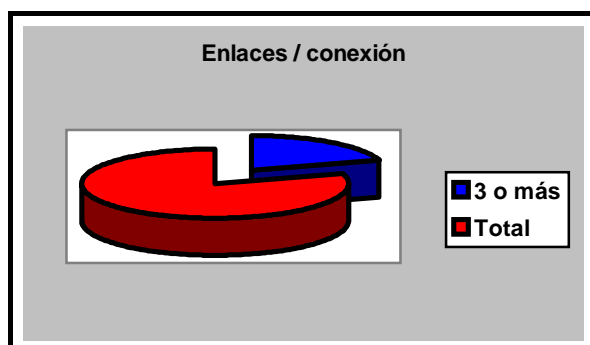
Menos de 3	%	A partir de 3	%
189	74'7	64	25'2

3) Gráfica representativa del número de conexiones y número de oraciones.
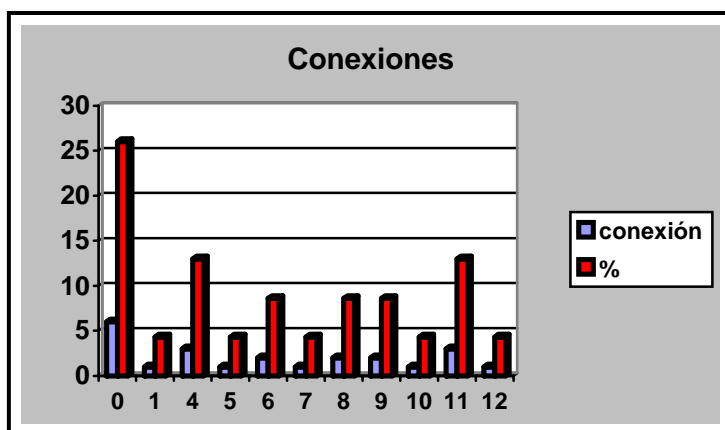
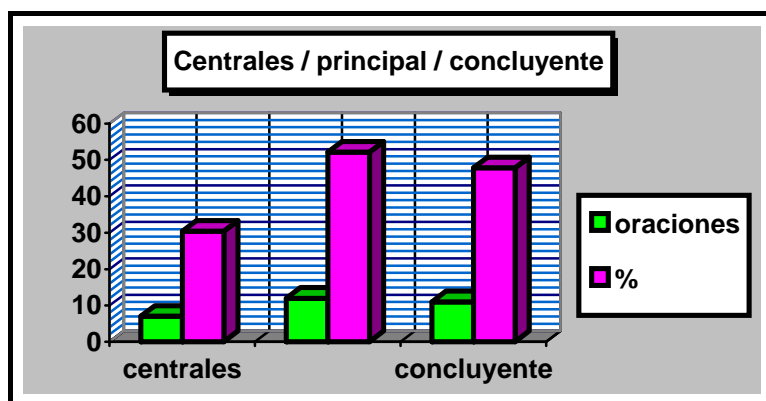| Nº Conexiones	0	1	4	5	6	7	8	9	10	11	12	Total
Nº Oraciones	6	1	3	1	2	1	2	2	1	3	1	23
%	26	4'3	13	4'3	8'6	4'3	8'6	8'6	4'3	13	4'3	99'3

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
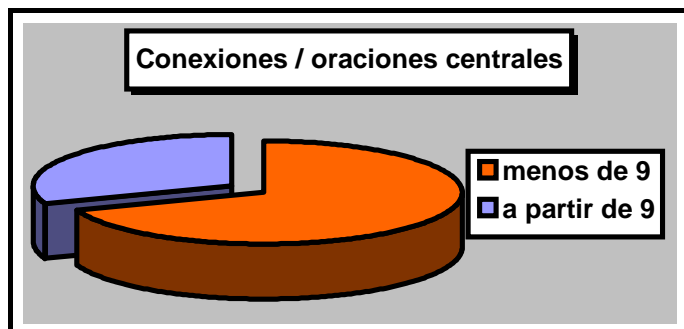
Menos de 9	%	A partir de 9	%
16	69'5	7	30'4

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Tipo de oraciones	Nº oraciones	Total	%
Centrales	7	23	30'4
Principal	12	23	52'1
Concluyente	11	23	47'8

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	274	42	45	3	7	3	36	68	0	0	21	4	503
%	54'4	8'3	8'9	0'5	1'3	0'5	7'1	13'5	0	0	4'1	0'7	99'3

5. 2. 3. Texto 3: *Both nylon and PET fibers burn continuously under atmospheric conditions*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 2, 3, 4 y 10.[70] Tendremos en cuenta 5 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 3. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 1[71], 2, 3, 4, 5, 10 y 15 (dudosa)[72].

1. We would like to present two series of photographs showing the characteristic burning behaviors of a nylon fiber and a polyethyleneterephthalate (PET) fiber, in order to help people safely handle these fibers in their everyday lives.

2. In many textbooks, especially on textiles, nylon and PET fibers are classified as flammable but self-extinguishing. **3**. In other references, we have read that nylon and PET give off combustible gases when they are heated above their decomposition temperatures. **4**. According to references, nylon gives propylene (8.8% in volume of total detected gases evolved), cyclopentanone (32.2%), hexamethylenediamine and other methylene amines (22.5%), and others (3), and PET gives ethylene (8.3% in volume of total detected gases evolved), acetaldehyde (10.9%), benzoic acid (37.5%), and other phenyl compounds.

5. On the basis of these pyrolysis data, we were doubtful about the flammable but self-extinguishing classification for nylon and PET.

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[70] El objetivo del escritor es presentar un experimento cuyos resultados contradicen la descripción ofrecida por la mayoría de los informes. Las oraciones 2 y 3 indican cómo se consideran el nylon y PET en la mayoría de las referencias. La oración 4 informa sobre los gases que desprenden estas dos fibras cuando se queman. Por último, la oración 10 describe el experimento llevado a cabo y los resultados del mismo.

[71] La introducción de esta oración número 1 no interrumpe el argumento, sino que amplía el resumen mediante la presentación del objetivo del texto. La oración 5 justifica el experimento.

[72] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al `cuerpo del texto'.

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10. <Once> a part of the terminal end [of thread samples about 50cm long] was ignited, [and] it burned continuously, as shown in the series of photographs in this paper, in contrast to the descriptions in textbooks stating that it "burns slowly but if the sample is removed from the flame it self-extinguishes".

5. 2. 3. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 1[73] y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 1, 2, 3, 4, 5, 10, 12, 15 y 20[74] constituyen un resumen.

1. We would like to present two series of photographs showing the characteristic burning behaviors of a nylon fiber and a polyethyleneterephthalate (PET) fiber, in order to help people safely handle these fibers in their everyday lives.

2. In many textbooks, especially on textiles, nylon and PET fibers are classified as flammable but self-extinguishing. **3**. In other references, we have read that nylon and PET give off combustible gases when they are heated above their decomposition temperatures. **4**. According to references, nylon gives propylene (8.8% in volume of total detected gases evolved), cyclopentanone (32.2%), hexamethylenediamine and other methylene amines (22.5%), and others (3), and PET gives ethylene (8.3% in volume of total detected gases evolved), acetaldehyde (10.9%), benzoic acid (37.5%), and other phenyl compounds.

5. On the basis of these pyrolysis data, we were doubtful about the flammable but self-extinguishing classification for nylon and PET.

10. <Once> a part of the terminal end [of thread samples about 50cm long] was ignited, [and] it burned continuously, as shown in the series of photographs in this paper, in contrast to the descriptions in textbooks stating that it "burns slowly but if the sample is removed from the flame it self-extinguishes".

12. In PET thread, shown in Figure 2, the flame propagates more quickly [than in nylon thread, as seen in Figure 1] and is accompanied by black smoke. **15**. During the course of the burning, pictures were taken of the small spherical fire balls composed of a molten polymer.

20. If you want to do this type of experiment, you should wear a glove made of non-flammable fibers so your hand will not be burned.

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[73]   Consideramos esta oración como principal, ya que introduce el objetivo del escrito.
[74]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

5. 2. 3. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 10^{75} y es una de las que establece más conexiones con las oraciones anteriores. Las oraciones 1, 2, 5, 8, 10, 11, 12 y 14^{76} constituyen un resumen.

1. We would like to present two series of photographs showing the characteristic burning behaviors of a nylon fiber and a polyethyleneterephthalate (PET) fiber, in order to help people safely handle these fibers in their everyday lives.

2. In many textbooks, especially on textiles, nylon and PET fibers are classified as flammable but self-extinguishing.

5. On the basis of these pyrolysis data [nylon gives propylene (8.8% in volume of total detected gases evolved), cyclopentanone (32.2%), hexamethylenediamine and other methylene amines (22.5%), and others (3), and PET gives ethylene (8.3% in volume of total detected gases evolved), acetaldehyde (10.9%), benzoic acid (37.5%), and other phenyl compounds], we were doubtful about the flammable but self-extinguishing classification for nylon and PET.

8. Thread samples about 50 cm long were hung up just in front of a focused camera and then ignited at the bottom end with a tiny flame from a cigarette lighter. **10**. Once a part of the terminal end was ignited, it burned continuously, as shown in the series of photographs in this paper, in contrast to the descriptions in textbooks stating that it "burns slowly but if the sample is removed from the flame it self-extinguishes".

11. In nylon thread, as seen in Figure 1, the flame propagates slowly. **12**. In PET thread, shown in Figure 2, the flame propagates more quickly and is accompanied by black smoke. **14**. When the ignition flame was removed, the threads continued to burn.
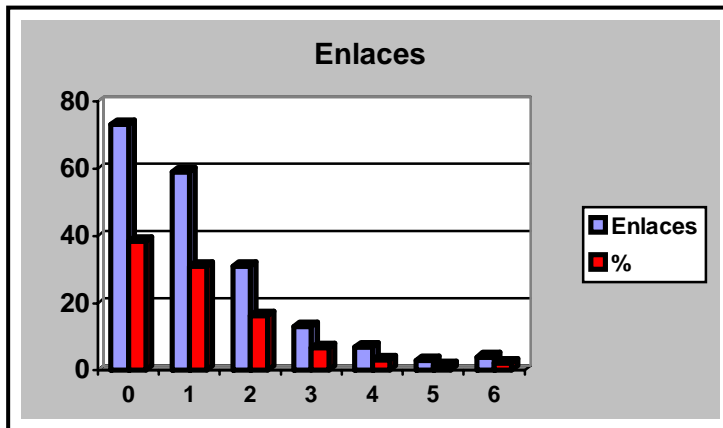
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[75] Esta oración es la concluyente, ya que informa sobre los resultados del experimento llevado a cabo.

[76] La información de las oraciones 3 y 4, pertenecientes al 'cuerpo del texto', está contenida en la oración 5.
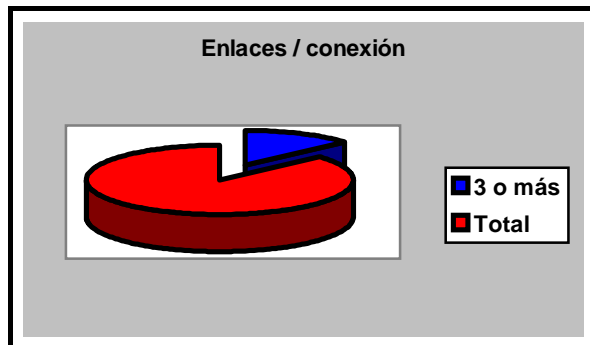
1) Gráfica representativa del número de enlaces entre oraciones.

Enlaces

Enlaces	0	1	2	3	4	5	6	Total
Celdas	73	59	31	13	7	3	4	190
%	38'4	31	16'3	6'8	3'1	1'5	2'1	99'2

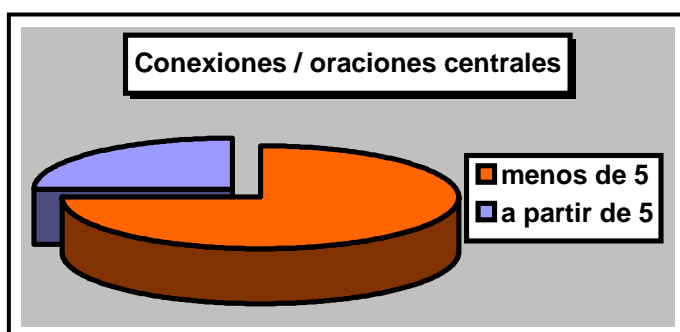2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 3	%	A partir de 3	%
159	83'6	31	16'3

3) Gráfica representativa del número de conexiones y número de oraciones.
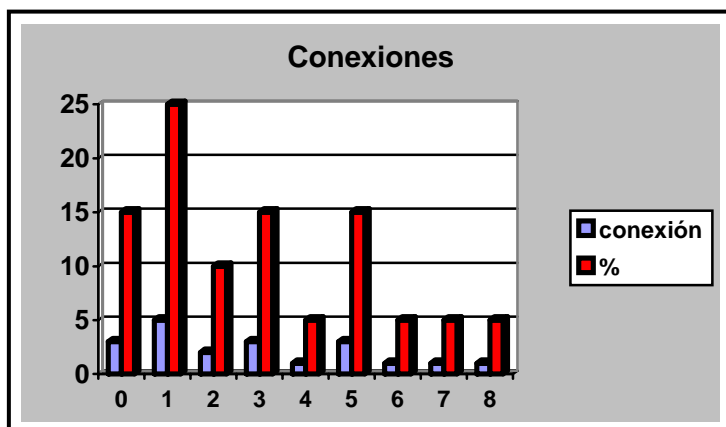
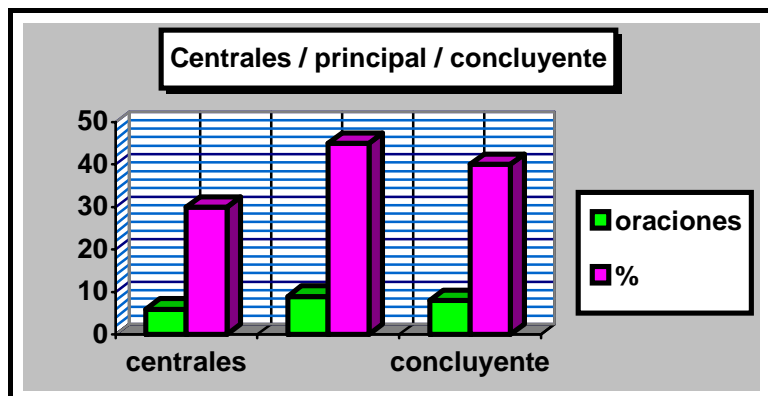| N° Conexiones	0	1	2	3	4	5	6	7	8	Total
N° Oraciones	3	5	2	3	1	3	1	1	1	20
%	15	25	10	15	5	15	5	5	5	100

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 5	%	A partir de 5	%
14	70	6	30

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente

Tipo de oraciones	Nº oraciones	Total	%
Centrales	6	20	30
Principal	9	20	45
Concluyente	8	20	40

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	141	18	16	9	2	6	38	9	2	0	10	2	253
%	55'7	7'1	6'3	3'5	0'7	2'3	15	3'5	0'7	0	3'9	0'7	99'4

5. 2. 4. Texto 4: *A chromatographic parable*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 4, 6, 8, 9, 22 y 25[77]. Tendremos en cuenta 4 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 4. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 4, 6, 8, 9, 13, 19, 22, 25 y 28[78].

4. The townsfolk [in a Southern town] have the commonly observed characteristics that most of them are either Saints or Sinners; however, some of the folks are neither Saints nor Sinners (The Agnostic-Teetotalers) and others are both Saints and Sinners (we'11 call this group the Hypocrites).

6. During the [Fourth of July] race the town folks all run at the same speed, but the Saints cannot pass a church without entering to pray for a while, and the Sinners cannot possibly pass by a bar without pausing for a refreshing beer. **8**. Most people want the Saints to win the race, but this is not probable because, while they are in church, the Agnostic-Teetotalers are still running. **9**. It is fairly obvious, even to college students, that the Agnostic-Teetotalers will win the race, and, quite deservedly, the Hypocrites will come in last.

13. <*So*>, what will determine the results of the Saints-Sinners race?

19. The point of the exercise is to illustrate the concept that the results of this particular race are determined by the amount of time the participants spend not racing, that is, drinking or praying as the case may be.

22. A secondary effect is possible if not all the racers run at exactly the same speed, if some Saints pray longer than others, or if some Sinners have more than one beer. **25**. Thus, there would be a distribution of individuals within a group of townsfolk and possible overlap of Saints and Sinners at the finish line. **28**. In the 4th of July race analogy, it is possible that all the

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[77] El autor, por medio de una comparación, presenta las distintas fases de separación de sustancias químicas mediante el proceso cromatográfico. La oración 4 describe las características de los distintos tipos de personas que habitan en un pueblo (las sustancias químicas). La oración 6 describe la fase móvil (todos corren a la misma velocidad) y la fase estacionaria (parada en iglesias y bares). Las oraciones 8 y 9 señalan quiénes ganarán y perderán la carrera (las sustancias que quedarán separadas en primer y último lugar). Las oraciones 22 y 25 tratan sobre el efecto secundario por el que puede haber un solapamiento de sustancias químicas (santos y pecadores).

[78] La introducción de la oración 13 no interrumpe el argumento, sino que presenta la pregunta que un lector puede realizarse durante la lectura. La oración 19 anticipa el contenido de la oración 22.

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townsfolk (Saints, Sinners, Agnostics, and Hypocrites alike) would finish the race at the same time.

5. 2. 4. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 4[79] y es una de las que presenta más conexiones con las oraciones posteriores. Las oraciones 4, 6, 8, 9, 13, 22, 25 y 28[80] constituyen un resumen. Como podemos observar, el resumen del texto ofrecido por la oración principal coincide con el de las oraciones centrales a excepción de la oración 19.

5. 2. 4. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 28[81] y es la que establece más conexiones con las oraciones anteriores. Las oraciones 3, 4, 6, 7, 8, 9, 13, 22, 23, 24, 25 y 28[82] constituyen un resumen.

3. In a small Southern town (it must be a Southern town or the story doesn't work), the people are planning a Fourth of July race from one end of town to the other.

4. The townsfolk have the commonly observed characteristics that most of them are either Saints or Sinners; however, some of the folks are neither Saints nor Sinners (The Agnostic-Teetotalers) and others are both Saints and Sinners (we'11 call this group the Hypocrites).

6. During the race the town folks all run at the same speed, but the Saints cannot pass a church without entering to pray for a while, and the Sinners cannot possibly pass by a bar without pausing for a refreshing beer. **7**. The immediate question then is who will win the 4th of July race? **8**. Most people want the Saints to win the race, but this is not probable because, while they are in church, the Agnostic-Teetotalers are still running. **9**. It is fairly obvious, even to

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[79] Puede considerarse esta oración como principal, ya que por medio de ella el escritor informa de las características de la gente del pueblo.

[80] Este resumen contiene las oraciones pertenecientes al "cuerpo del texto".

[81] Desde el punto de vista de un científico, la oración 28 no se podría considerar como la oración que cierra el tema, ya que, si todos llegan a la meta al mismo tiempo, entonces la separación de las sustancias químicas, que es el objetivo, no se ha efectuado. Parece que el objetivo del escritor es señalar al lector que la separación de sustancias es tarea complicada y no siempre da resultados satisfactorios. Desde este punto de vista sí puede considerarse concluyente.

[82] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

college students, that the Agnostic-Teetotalers will win the race, and, quite deservedly, the Hypocrites will come in last.

13. <Sø>, what will determine the results of the Saints-Sinners race?

22. A secondary effect is possible if not all the racers run at exactly the same speed, if some Saints pray longer than others, or if some Sinners have more than one beer. **23**. In this case, not all the Sinners will reach the finish line at the same time. **24**. It is even possible that some very fast Saints could reach the finish line (elute) before some of the more tipsy Sinners or vice versa.**25**. Thus, there would be a distribution of individuals within a group of townsfolk and possible overlap of Saints and Sinners at the finish line. **28**. In the 4th of July race analogy, it is possible that all the townsfolk (Saints, Sinners, Agnostics, and Hypocrites alike) would finish the race at the same time.

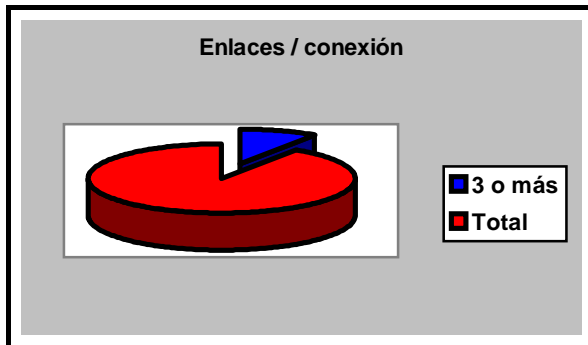1) Gráfica representativa del número de enlaces entre oraciones.
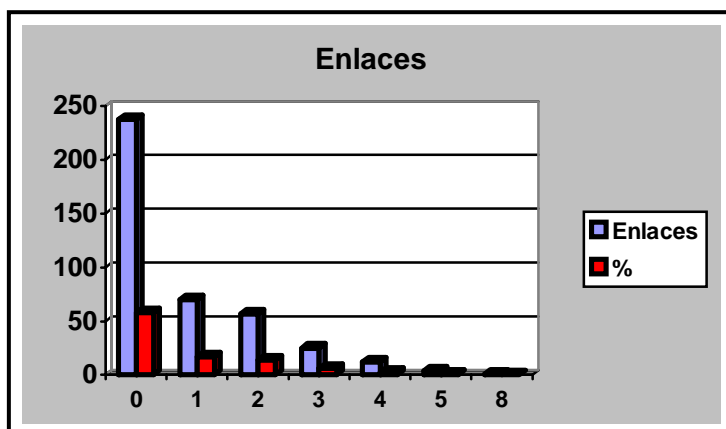
Enlaces	0	1	2	3	4	5	8	Total
Celdas	237	70	57	25	12	4	1	406
%	58'3	17'2	14	6'1	2'9	0'9	0'2	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 3	%	A partir de 3	%
364	89'6	42	10'3

3) Gráfica representativa del número de conexiones y número de oraciones.
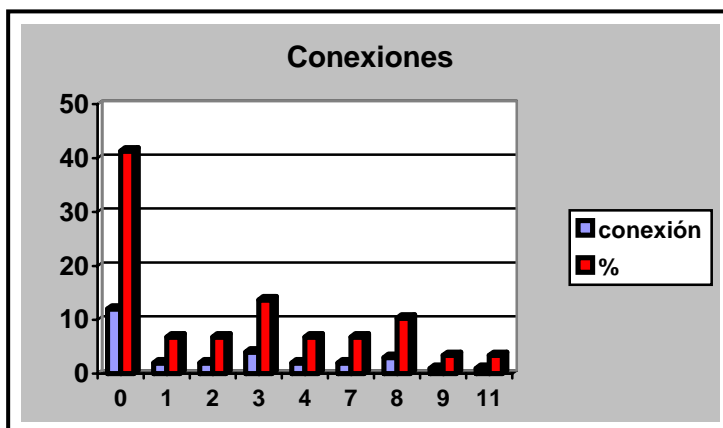
Conexiones

Nº Conexiones	0	1	2	3	4	7	8	9	11	Total
Nº Oraciones	12	2	2	4	2	2	3	1	1	29
%	41'3	6'8	6'8	13'7	6'8	6'8	10'3	3'4	3'4	99'3

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Conexiones / oraciones centrales

□ menos de 4
□ a partir de 4
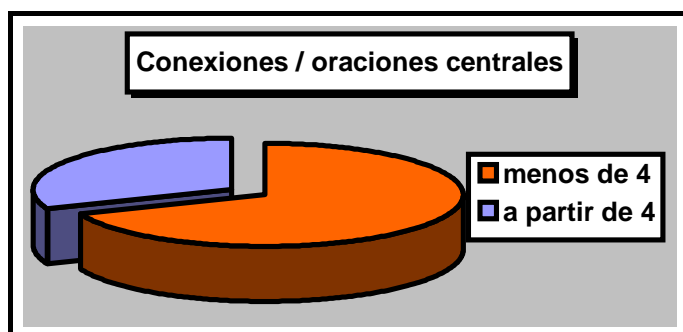
Menos de 4	%	A partir de 4	%
20	**68'9**	**9**	**31**

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
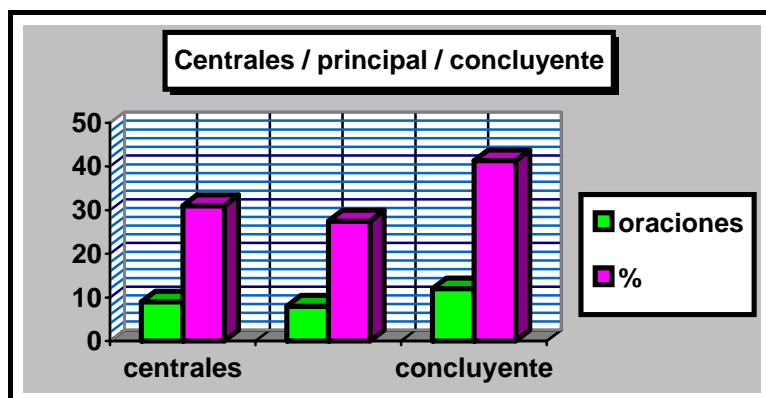
□ oraciones
□ %

Tipo de oraciones	Nº oraciones	Total	%
Centrales	9	29	31
Principal	8	29	27'5
Concluyente	12	29	41'3

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	231	17	30	6	0	17	5	28	0	0	0	3	337
%	68'5	5	8'9	1'7	0	5	1'4	8'3	0	0	0	0'8	99'6

5. 2. 5. Texto 5: *High-flying polymer*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 1, 12 y 14[83]. Por lo tanto, tomaremos 3 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 5. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales serían las siguientes: 1, 7, 10, 12, 13, 14 y 15[84].

1. A new type of fire-resistant polymer could improve your chances of survival in a plane crash, according to Phillip Westmoreland, professor of chemical engineering at the University of Massachusetts Amherst in the US.

7. Westmoreland and his team focused on polyhydroxyamide (PHA) as a potential candidate for a fire-resistant polymer. **10**. 'PBO has the best non-flammability of any material we know of, but you just can't use the stuff', commented Westmoreland.

12. Researchers at the University of Massachusetts synthesised several structural variants of PHA, from the simplest form (R=H), to phosphate-containing R-groups, to see which had the lowest flammability. **13**. At the same time, a team at the FAA developed a new microcalorimeter that could evaluate the polymers' ability to burn in milligram quantities, a method with advantages over conventional tests which involve much larger samples – eg 'taking an aircraft seat and setting fire to it'. **14**. The results revealed that all forms of PHA had

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[83] La oración 1 introduce el tema justificando la importancia de la investigación sobre polímeros resistentes al fuego para su utilización en aviones. La oración 12 describe la investigación llevada a cabo sobre PHA. Por último, la oración 14 informa sobre los resultados.

[84] La oración 7 informa sobre el polímero en el que se va a basar la investigación, la 10 de por qué la variante PBO no puede utilizarse. Las oraciones 13 y 15 amplían la información sobre las pruebas realizadas para evaluar la capacidad ignífuga de la variante del PHA. Ninguna de ellas interrumpe el argumento.

low flammability, but the best polymer was the simplest - ie when R=H. **15**. In tests, this form of PHA gave passengers ca 10 times longer to get out of an aircraft than the best existing polymer.

5. 2. 5. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 1[85] y es la que establece más conexiones con las oraciones posteriores. Las oraciones 1, 4, 5, 6, 7, 12, 13 y 15[86] constituyen un resumen.

1. A new type of fire-resistant polymer could improve your chances of survival in a plane crash, according to Phillip Westmoreland, professor of chemical engineering at the University of Massachusetts Amherst in the US.

4. When a plane crashes and catches fire, polymers decompose from the heat, releasing combustible gases, which in turn also catch fire. **5**. According to Westmoreland's co-researcher Richard Lyon, Federal Aviation Authority (FAA), programme manager for fire research and fire safety, 40 per cent of the fatalities that occur in impact survivable air accidents are a result of fire. **6**. Fire-resistant polymers are therefore an important target.

7. Westmoreland and his team focused on polyhydroxyamide (PHA) as a potential candidate for a fire-resistant polymer.

12. Researchers at the University of Massachusetts synthesised several structural variants of PHA, from the simplest form (R=H), to phosphate-containing R-groups, to see which had the lowest flammability. **13**. At the same time, a team at the FAA developed a new microcalorimeter that could evaluate the polymers' ability to burn in milligram quantities, a method with advantages over conventional tests which involve much larger samples – eg 'taking an aircraft seat and setting fire to it'. **15**. In tests, <this form of PHA> [when R=H] gave passengers ca 10 times longer to get out of an aircraft than ~~the best existing~~ polymer.

5. 2. 5. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 15[87] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 1, 12, 13, 14 y 15[88] constituyen un resumen.

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[85] Podemos considerar esta oración como principal, ya que introduce el tema justificando la importancia de la investigación realizada.

[86] La oración 14, perteneciente al 'cuerpo del texto', no se incluye en este resumen. Podemos observar que la información está contenida en la oración 15.

[87] Podemos considerar esta oración como concluyente, ya que presenta el resultado práctico de la investigación llevada a cabo.

[88] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

1. A new type of fire-resistant polymer could improve your chances of survival in a plane crash, according to Phillip Westmoreland, professor of chemical engineering at the University of Massachusetts Amherst in the US.

12. Researchers at the University of Massachusetts synthesised several structural variants of PHA, from the simplest form (R=H), to phosphate-containing R.-groups, to see which had the lowest flammability. **13**. At the same time, a team at the FAA developed a new microcalorimeter that could evaluate the polymers' ability to burn in milligram quantities, a method with advantages over conventional tests which involve much larger samples – eg 'taking an aircraft seat and setting fire to it'. **14**. The results revealed that all forms of PHA had low flammability, but the best polymer was the simplest - ie when R=H. **15**. In tests, this form of PHA gave passengers ca 10 times longer to get out of an aircraft than the best existing polymer.

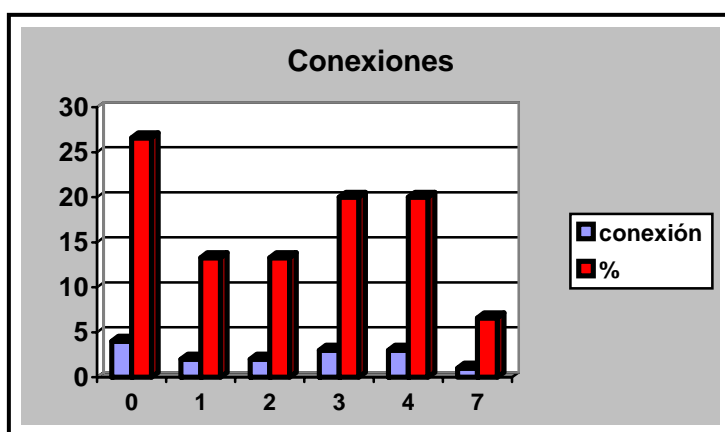1) Gráfica representativa del número de enlaces entre oraciones.
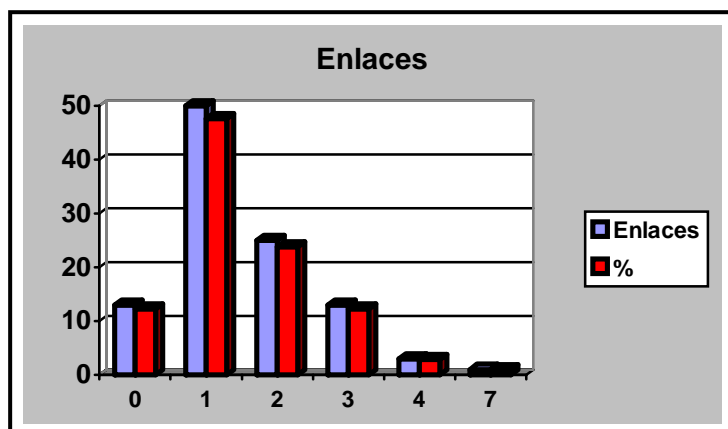
Enlaces	0	1	2	3	4	7	Total
Celdas	13	50	25	13	3	1	105
%	12'3	47'6	23'8	12'3	2'8	0'9	99'7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.
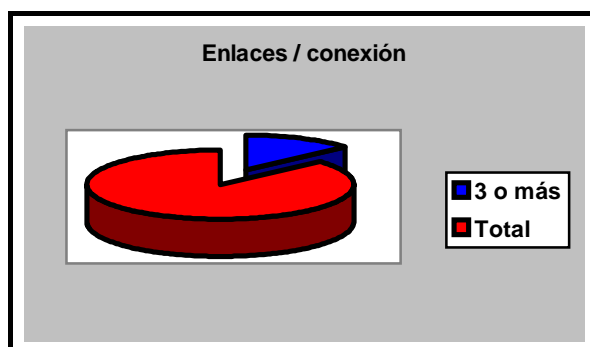
Menos de 3	%	A partir de 3	%
88	83'8	17	16'1

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº Conexiones	0	1	2	3	4	7	Total
Nº Oraciones	4	2	2	3	3	1	15
%	26'6	13'3	13'3	20	20	6'6	99'8

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Conexiones / oraciones centrales

- menos de 3
- a partir de 3
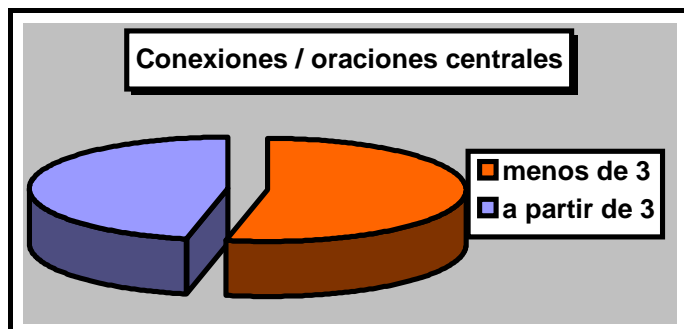
Menos de 3	%	A partir de 3	%
8	53'3	7	46'6

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente
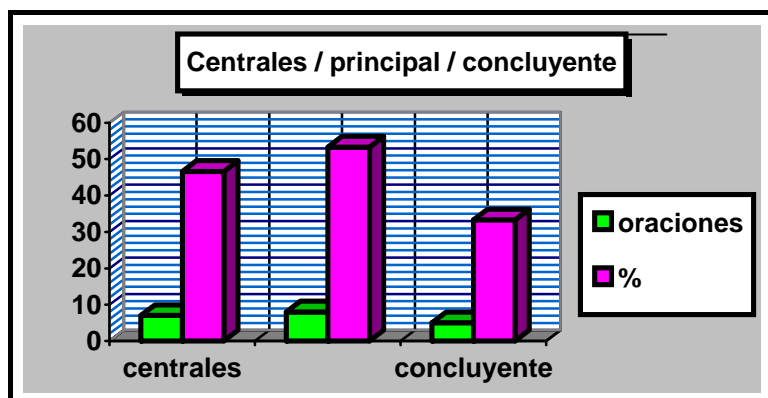
- oraciones
- %

Tipo de oraciones	Nº oraciones	Total	%
Centrales	7	15	46'6
Principal	8	15	53'3
Concluyente	5	15	33'3

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	105	8	9	0	0	4	8	23	1	0	0	0	158
%	66'4	5	5'6	0	0	2'5	5	14'5	0'6	0	0	0	99'6

5. 2. 6. Texto 6: *Flash of inspiration wins Nobel prize for chemistry*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 2, 4, 6, 17, 18, 20, 23, 25, 27 y 28[89]. Tendremos en cuenta 11 conexiones para establecer las oraciones centrales.

5. 2. 6. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son las siguientes: 2, 4, 5, 6, 8, 11, 12, 13, 15, 17, 18, 20 (dudosa)[90], 23, 25, 27, 28 y 30[91].

2. Using brief bursts of light from lasers, ~~he~~ [Chemist Ahmed Zewail] developed a way to take 'snapshots' of individual molecules as they change during a chemical reaction.

4. Like a fast camera that freezes a dancer in motion, the laser beam can illuminate a molecule as it is transformed from one shape and structure to another during a chemical reaction – its transition state. **5**. This transition state, which exists between the reactant and the product, lasts for only femtoseconds, so observing it before it disappears was, until Zewail's experiments, almost impossible. **6**. Being able to observe this state is helping chemists to find

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[89] La oración 2 introduce el tema del texto. La oración 4 informa sobre las propiedades del laser para observar el estado transitorio de una reacción química. La oración 6 señala la importancia de la observación del estado transitorio. Las oraciones 17, 18 y 20 describen las investigaciones llevadas a cabo por Zewail. La oración 23 informa sobre la primera reacción unimolecular, mientras que la 25 y 27 tratan sobre las reacciones bimoleculares. Por último, la oración 28 concluye con las últimas investigaciones realizadas por Zewail.

[90] Esta oración, que establece conexiones mediante enlaces dudosos, no se puede eliminar, ya que pertenece al 'cuerpo del texto'.

[91] La introducción de las oración 5 no interrumpe el argumento, ya que nos indica la importancia de la investigación de Zewail. Las oraciones 8, 11, 12 y 13 tampoco interrumpen el argumento, ya que informan sobre las investigaciones previas a las de Zewail. La oración 15 aporta información adicional definiendo el femtosegundo. Por último, la oración 30 señala la repercusión de la investigación de Zewail.

out exactly how particular reactions work and allowing them to predict the outcome of other related reactions as well as the complex interactions of, for example, a drug molecule with a biological receptor.

8. ~~<They>~~ H. Hartridge and EJ. Roughton in the 1920s used a spectrophotometer to observe what happens when two compounds are mixed and saw chemical reactions taking place in a thousandth of a second. **11**. Poter and Norrish shared the 1967 Nobel prize with the German chemist Manfred Eigen, who used heat and pressure shock methods to trigger a reaction and observe 'almost' the instant at which it was happening (Eigen was also working at the milli-to micro-second timescale).

12. During the early 1980s, Dudley Herschbach, Yuan Lee and John Polanyi had improved the ability to observe chemical reactions down to the picosecond scale using a vacuum collision experiments – for this work they received the 1986 Nobel prize for chemistry. **13**. With shorter and shorter timescales, chemists began to reveal the intermediate chemical species in reactions – not, the transition states, they were still too fleeting, but the structures either side that lasted just long enough for them to record. **15**. The femtosecond – 10^{-15}s – represents the frequency at which molecules vibrate, without which there would be no interaction and no chemical change.

17. Zewail realised that to observe molecules at this level his flashlamp would have to be very fast, a pulsing laser that flashes once every femtosecond, he reasoned, would do the job. **18**. For their simplest experiment, Zewail and his colleagues chose a unimolecular reaction, ie where a single substance changes into another without the involvement of a second chemical, and formed a molecular beam in a vacuum chamber. **20**. ~~<Then,>~~ by applying a weaker, 'probe pulse' from a laser lasting a few femtoseconds - at a frequency to coincide with the absorption frequency of the suspected transition state of the substance - Zewail and his team obtained a characteristic spectrum from the light emitted by the transition state.

23. Zewail's first unimolecular reaction - the one that started the whole femtochemistry field - was the dissociation of iodine cyanide (ICN), which takes just 200 femtoseconds.

25. Zewail and his colleagues then moved on to bimolecular reactions, which involve two interacting chemical species. **27**. Zewail's flash revealed that the reaction [hydrogen with carbon dioxide, which produces carbon monoxide and hydroxy radicals] passes through a transitionary HOCO molecule, which exists fleetingly for a mere picosecond (1000fs). **28**. His team also began to look at a puzzle that had occupied chemical minds for some time - ie would two seemingly identical bonds in a molecule break simultaneously in, for instance, a dissociation reaction.

30. Since Zewail's pioneering studies in the 1980s and 1990s, many other research teams have begun to use femtochemistry to look at diverse reactions – watching them happen in real-time.

5. 2. 6. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 2 y es la que establece más conexiones con las oraciones posteriores. Las oraciones: 2, 3, 4, 6, 8, 9, 11, 12, 15, 16, 17, 18, 19, 20 (dudosa)[92], 22, 23, 24 (dudosa)[93], 25, 27, 28 y 30[94] constituyen un resumen.

2. Using brief bursts of light from lasers, ~~<he>~~ [Chemist Ahmed Zewail] developed a way to take 'snapshots' of individual molecules as they change during a chemical reaction.

3. Modern lasers can produce a very short burst of light, lasting a few femtoseconds ie a million-billionth of a second. **4**. Like a fast camera that freezes a dancer in motion, the laser beam can illuminate a molecule as it is transformed from one shape and structure to another during a chemical reaction – its transition state. **6**. Being able to observe this state is helping chemists to find out exactly how particular reactions work and allowing them to predict the outcome of other related reactions as well as the complex interactions of, for example, a drug molecule with a biological receptor.

8. <They> [H. Hartridge and EJ. Roughton in the 1920s] used a spectrophotometer to observe what happens when two compounds are mixed and saw chemical reactions taking place in a thousandth of a second. **9**. In the 1960s, Ronald Norrish and George Porter came up with the idea of using a flash-lamp to freeze the reactions – the shorter the flash, the more transient the reactions they could see. **11**. Poter and Norrish shared the 1967 Nobel prize with the German chemist Manfred Eigen, who used heat and pressure shock methods to trigger a reaction and observe 'almost' the instant at which it was happening (Eigen was also working at the milli-to micro-second timescale).

12. During the early 1980s, Dudley Herschbach, Yuan Lee and John Polanyi had improved the ability to observe chemical reactions down to the picosecond scale using a vacuum collision experiments – for this work they received the 1986 Nobel prize for chemistry. **15**. The femtosecond – 10^{-15}s – represents the frequency at which molecules vibrate, without which there would be no interaction and no chemical change. **16**. If chemists could watch molecular vibrations they would have reached the limit of observation.

17. Zewail realised that to observe molecules at this level his flashlamp would have to be very fast, a pulsing laser that flashes once every femtosecond, he reasoned, would do the job. **18**. For their simplest experiment, Zewail and his colleagues chose a unimolecular reaction, ie where a single substance changes into another without the involvement of a second chemical, and formed a molecular beam in a vacuum chamber. **19**. By blasting this

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[92] Como se ha señalado anteriormente, consideramos que esta oración es necesaria, ya que pertenece al 'cuerpo del texto'.

[93] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.

[94] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

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beam with a 'pump pulse' of laser light they excited the molecules and triggered a change. **20**. Then, by applying a weaker, 'probe pulse' from a laser lasting a few femtoseconds - at a frequency to coincide with the absorption frequency of the suspected transition state of the substance - Zewail and his team obtained a characteristic spectrum from the light emitted by the transition state.

22. The chemists compared the characteristic spectrum with the theoretical pattern obtained by using the methods of last year's Nobel chemists John Pople and Walter Kohn *(Educ. Chem.,* 1999, 36(1), 7) who provided them with the means to predict molecular structure and so their characteristic spectra. **23**. Zewail's first unimolecular reaction - the one that started the whole femtochemistry field - was the dissociation of iodine cyanide (ICN), which takes just 200 femtoseconds.

25. Zewail and his colleagues then moved on to bimolecular reactions, which involve two interacting chemical species. **27**. Zewail's flash revealed that the reaction [hydrogen with carbon dioxide, which produces carbon monoxide and hydroxy radicals] passes through a transitionary HOCO molecule, which exists fleetingly for a mere picosecond (1000fs). **28**. His team also began to look at a puzzle that had occupied chemical minds for some time - ie would two seemingly identical bonds in a molecule break simultaneously in, for instance, a dissociation reaction.

30. Since Zewail's pioneering studies in the 1980s and 1990s, many other research teams have begun to use femtochemistry to look at diverse reactions - watching them happen in real-time.

5. 2. 6. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 28[95] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 1, 2, 4, 5, 6, 8, 11, 12, 13, 15, 16, 17, 18, 20, 23, 24, 25, 27, 28, 29 y 30[96] constituyen un resumen.

1. Chemist Ahmed Zewail of the California Institute of Technology (Caltech) (pictured top right) was the recipient of the 1999 Nobel prize for chemistry for a flash of inspiration that is revolutionising our understanding of chemical reactions. **2**. Using brief bursts of light from lasers, he developed a way to take 'snapshots' of individual molecules as they change during a chemical reaction.

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[95] La oración 30, sin lugar a dudas, es la que cierra el tema del escrito. Sin embargo, desde el punto de vista de un científico, la oración concluyente sería la 28, ya que expresa las últimas investigaciones realizadas por Zewail y esa es la que hemos considerado en nuestro análisis.
[96] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

4. Like a fast camera that freezes a dancer in motion, the laser beam can illuminate a molecule as it is transformed from one shape and structure to another during a chemical reaction – its transition state. **5**. This transition state, which exists between the reactant and the product, lasts for only femtoseconds, so observing it before it disappears was, until Zewail's experiments, almost impossible. **6**. Being able to observe this state is helping chemists to find out exactly how particular reactions work and allowing them to predict the outcome of other related reactions as well as the complex interactions of, for example, a drug molecule with a biological receptor.

8. <~~They~~> [H. Hartridge and EJ. Roughton] used a spectrophotometer to observe what happens when two compounds are mixed and saw chemical reactions taking place in a thousandth of a second. **11**. Poter and Norrish shared the 1967 Nobel prize with the German chemist Manfred Eigen, who used heat and pressure shock methods to trigger a reaction and observe 'almost' the instant at which it was happening (Eigen was also working at the milli-to micro-second timescale).

12. During the early 1980s, Dudley Herschbach, Yuan Lee and John Polanyi had improved the ability to observe chemical reactions down to the picosecond scale using a vacuum collision experiments – for this work they received the 1986 Nobel prize for chemistry. **13**. With shorter and shorter timescales, chemists began to reveal the intermediate chemical species in reactions – not, the transition states, they were still too fleeting, but the structures either side that lasted just long enough for them to record. **15**. The femtosecond – 10^{-15}s – represents the frequency at which molecules vibrate, without which there would be no interaction and no chemical change. **16**. If chemists could watch molecular vibrations they would have reached the limit of observation.

17. Zewail realised that to observe molecules at this level his flashlamp would have to be very fast, a pulsing laser that flashes once every femtosecond, he reasoned, would do the job. **18**. For their simplest experiment, Zewail and his colleagues chose a unimolecular reaction, ie where a single substance changes into another without the involvement of a second chemical, and formed a molecular beam in a vacuum chamber. **20**. <~~Then,~~> by applying a weaker, 'probe pulse' from a laser lasting a few femtoseconds - at a frequency to coincide with the absorption frequency of the suspected transition state of the substance - Zewail and his team obtained a characteristic spectrum from the light emitted by the transition state.

23. Zewail's first unimolecular reaction - the one that started the whole femtochemistry field - was the dissociation of iodine cyanide (ICN), which takes just 200 femtoseconds. **24**. His results were published in 1987 in the *journal of physical chemistry* and showed the transition state just as the carbon-iodine bond in the molecule is about to break to form the cyano radical and an iodine atom.

25. Zewail and his colleagues then moved on to bimolecular reactions, which involve two interacting chemical species. **27**. Zewail's flash revealed that the reaction [hydrogen with carbon dioxide, which produces carbon monoxide and hydroxy radicals] passes through a transitionary HOCO molecule, which exists fleetingly for a mere picosecond (1000fs). **28**. His team also began to look at a puzzle that had occupied chemical minds for some time - ie would two seemingly identical bonds in a molecule break simultaneously in, for instance, a dissociation reaction. **29**. For the dissociation of tetrafluorodiiodoethane it turns out that the 'equivalent' C-1 bonds do not break at the same time - there is a delay of 200 fs following the splitting of the first.

30. Since Zewail's pioneering studies in the 1980s and 1990s, many other research teams have begun to use femtochemistry to look at diverse reactions - watching them happen in real-time.

1) Gráfica representativa del número de enlaces entre oraciones.
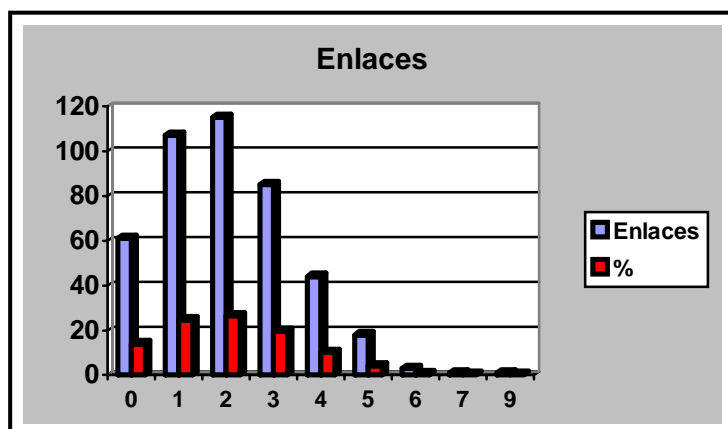
Enlaces	0	1	2	3	4	5	6	7	9	Total
Celdas	61	107	115	85	44	18	3	1	1	435
%	14	24'5	26'4	19'5	10'1	4'1	0'6	0'2	0'2	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión
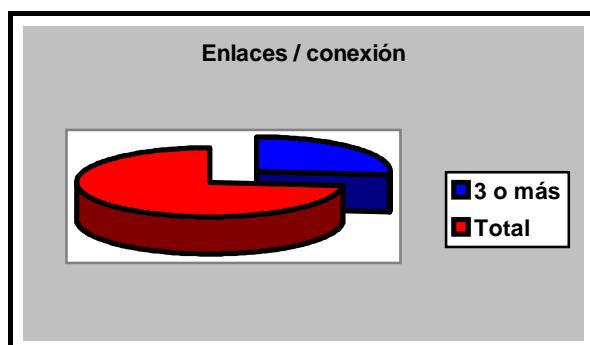
Menos de 3	%	A partir de 3	%
277	63'6	158	36'3

3) Gráfica representativa del número de conexiones y número de oraciones.
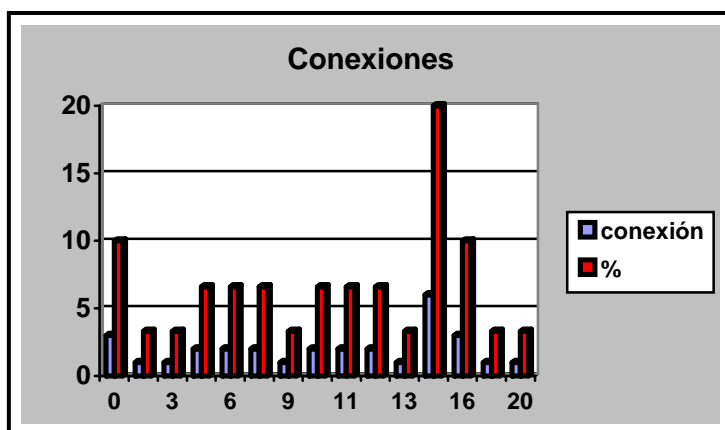
Conexiones

Nº Conexiones	Nº Oraciones	%
0	3	10
2	1	3'3
3	1	3'3
4	2	6'6
6	2	6'6
7	2	6'6
9	1	3'3
10	2	6'6
11	2	6'6
12	2	6'6
13	1	3'3
15	6	20
16	3	10
19	1	3'3
20	1	3'3
Total	30	99'4

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.
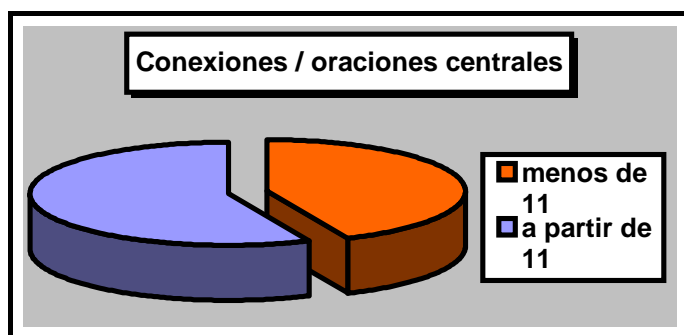
Menos de 11	%	A partir de 11	%
13	43'3	17	56'6

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.
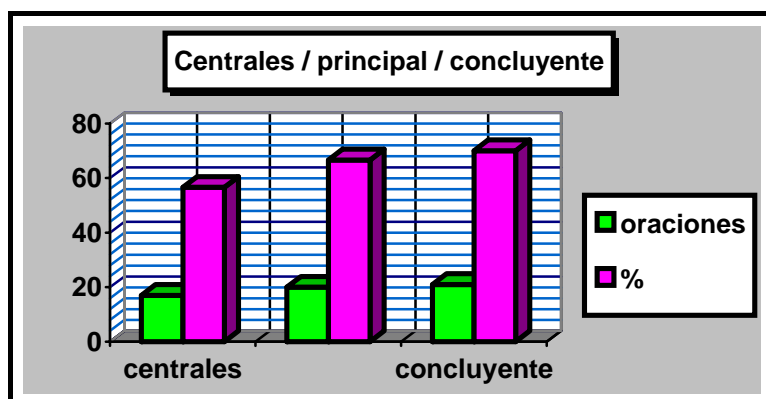
Tipo de oraciones	Nº oraciones	Total	%
Centrales	17	30	56'6
Principal	20	30	66'6
Concluyente	21	30	70

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	500	226	112	18	0	13	0	32	18	2	0	1	922
%	54'2	24'5	12'1	1'9	0	1'4	0	3'4	1'9	0'2	0	0'1	99'7

5. 2. 7. Texto 7: *Pressure to change solvents*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 3, 17, 19, 20, 21, 22, 30, 32, 45 y 46.[97] Tendremos en cuenta 6 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 7. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 1, 2, 3, 8, 17, 19, 20, 21, 22, 30, 32, 35, 36, 45 y 46.[98]

1. Decent decaffeinated coffee has been around since 1960s, when chemist Kurt Zosel found an alternative to using the toxic and unpleasant tasting benzene to extract the caffeine. **2**. He discovered that a l9th century chemical curiosity, known as a supercritical fluid (SCF), could dissolve out the caffeine but leave no solvent residue. **3**. Supercritical fluids while still curious are now being used to destroy toxic waste, make industrial chemicals without toxic and highly flammable volatile organic compounds (VOCs) and are even making it easier to take your medicine.

8. Many common chemicals can become supercritical, from carbon dioxide and water to the noble gas xenon.

17. Organic chemists from the University of Leeds have ~~also~~ been quick to latch on to Zosel's early discovery and have been using SCFs to extract natural products from plants and other organic materials for years. **19**. More recently, though, chemists have turned to SCFs to dissolve reactants that usually need a toxic and flammable VOC or do not dissolve at all.

20. Synthetic chemists are using SCFs in the manufacture of new types of polymer and other molecules that could function as industrial catalysts, thus avoiding the use of harmful solvents. **21**. Joseph DeSimone's group at the University of North Carolina in Chapel Hill, for

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[97]   La oración 3 introduce el tema justificando las utilidades de los fluidos supercríticos. Las oraciones 17 y 19 especifican una de las aplicaciones de los fluidos supercríticos. La siguiente aplicación se halla mencionada en las oraciones 20, 21 y 22. Las dos últimas, se encuentran expresadas en las oraciones 30, 32 y 45, 46 respectivamente. El que no incluyamos las oraciones que definen los fluidos supercríticos (5, 6 y 7) se debe a que consideramos que el objetivo del escritor no es la definición de los mismos, a la que dedica sólo 3 oraciones del texto, 6'1%, sino sus aplicaciones. La no inclusión de las oraciones 9 a 16 se justifica porque consideramos que el autor está ejemplificando un tipo de fluido supercrítico y, por lo tanto, no constituiría parte del 'cuerpo del texto'.

[98]   Podemos observar que la inclusión de las oraciones 1, 2, 8, 35 y 36 no afecta a la continuidad del argumento, sino que lo amplía.

example, is using supercritical carbon dioxide to make new types of fluorine-containing polymer. **22**. Adding fluorine atoms to a polymer chain is used to make some tough, smooth and chemically inert materials.

30. Martyn Poliakoff and his team at the University of Nottingham, meanwhile, are exploring how SCFs can help them make new industrial catalysts. **32**. Metal carbonyls are used in various industrial reactions as catalysts for speeding up the production of simple materials such as formic acid and formaldehyde and more complex compounds, like pharmaceuticals and polymers. **35**. The problem in making ~~them~~ [carbonyl compounds in which nitrogen or hydrogen molecules have been substituted for a carbonyl group] is that hydrogen and nitrogen gases do not dissolve well in conventional organic solvents at room temperature so it is hard to add the atoms to the starting molecule. **36**. The Nottingham team, however, has found that hydrogen mixes very well with supercritical carbon dioxide at 80-100atmos, allowing the reaction to add hydrogen or nitrogen atoms as needed to the carbonyl compound.

45. Scientists are now using SCFs to help them make drugs that normally have to be injected work when taken by mouth instead. **46**. A collaborative team from the US, Canada and Norway has found they can make sub-microscopic particles of the immunosuppressant drug cyclosporin, which is used to prevent transplanted organ rejection, by preparing it in supercritical carbon dioxide and then blasting it into normal water by releasing the pressure.

5. 2. 7. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 3 y es la que presenta más conexiones con las oraciones posteriores. Las oraciones 1, 2, 3, 4, 14, 17, 19, 20, 21, 22 (dudosa)[99], 26, 30, 32 (dudosa)[100], 35, 44, 45 y 46[101] constituyen un resumen.

1. Decent decaffeinated coffee has been around since 1960s, when chemist Kurt Zosel found an alternative to using the toxic and unpleasant tasting benzene to extract the caffeine. **2**. He discovered that a l9th century chemical curiosity, known as a supercritical fluid (SCF), could dissolve out the caffeine but leave no solvent residue. **3**. Supercritical fluids while still curious are now being used to destroy toxic waste, make industrial chemicals without toxic and highly flammable volatile organic compounds (VOCs) and are even making it easier to take your medicine. **4**. So what are these strange materials and why are they so supercritical?

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[99]   Esta oración, que establece conexiones mediante enlaces dudosos, no puede eliminarse, ya que pertenece al 'cuerpo del texto'.
[100]   Esta oración, que establece conexiones mediante enlaces dudosos, no puede eliminarse, ya que pertenece al 'cuerpo del texto'.
[101]   Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

14. Scientists at Sandia National Laboratories in New Mexico are using <~~this~~> [the] property [by which oxygen dissolved in supercritical water supports 'flameless' combustion] to destroy industrial and domestic waste without the need for conventional incineration.

17. Organic chemists from the University of Leeds have also been quick to latch on to Zosel's early discovery and have been using SCFs to extract natural products from plants and other organic materials for years. **19**. More recently, though, chemists have turned to SCFs to dissolve reactants that usually need a toxic and flammable VOC or do not dissolve at all.

20. Synthetic chemists are using SCFs in the manufacture of new types of polymer and other molecules that could function as industrial catalysts, thus avoiding the use of harmful solvents. **21**. Joseph DeSimone's group at the University of North Carolina in Chapel Hill, for example, is using supercritical carbon dioxide to make new types of fluorine-containing polymer. **22**. Adding fluorine atoms to a polymer chain is used to make some tough, smooth and chemically inert materials. **26**. Fluorine atoms have a residual negative charge, which makes them polar so they dissolve best in water, making it difficult to process them further because any other chemicals added will usually be soluble only in organic solvents.

30. Martyn Poliakoff and his team at the University of Nottingham, meanwhile, are exploring how SCFs can help them make new industrial catalysts. **32**. Metal carbonyls are used in various industrial reactions as catalysts for speeding up the production of simple materials such as formic acid and formaldehyde and more complex compounds, like pharmaceuticals and polymers. **35**. The problem in making <~~them~~> [carbonyl compounds in which nitrogen or hydrogen molecules have been substituted for a carbonyl group] is that hydrogen and nitrogen gases do not dissolve well in conventional organic solvents at room temperature so it is hard to add the atoms to the starting molecule.

44. But, what about SCFs making it easier to take medicines? **45**. Scientists are now using SCFs to help them make drugs that normally have to be injected work when taken by mouth instead. **46**. A collaborative team from the US, Canada and Norway has found they can make sub-microscopic particles of the immunosuppressant drug cyclosporin, which is used to prevent transplanted organ rejection, by preparing it in supercritical carbon dioxide and then blasting it into normal water by releasing the pressure.

5. 2. 7. 3. Resumen del texto a partir de la oración concluyente.

La oración 46[102] es la que presenta más conexiones con las oraciones anteriores. Las oraciones 3, 8, 17, 20 (dudosa)[103], 21, 27, 30, 31, 36, 37, 45 y 46[104] constituyen un resumen.

3. Supercritical fluids while still curious are now being used to destroy toxic waste, make industrial chemicals without toxic and highly flammable volatile organic compounds (VOCs) and are even making it easier to take your medicine.

8. Many common chemicals can become supercritical, from carbon dioxide and water to the noble gas xenon.

17. Organic chemists from the University of Leeds have <also> been quick to latch on to Zosel's early discovery [about the ability of supercritical fluid to dissolve out caffeine from coffee without leaving any solvent residue] and have been using SCFs to extract natural products from plants and other organic materials for years.

21. Joseph DeSimone's group at the University of North Carolina in Chapel Hill, <for example,> is using supercritical carbon dioxide to make new types of fluorine-containing polymer.

27. DeSimone's team has got around <this> [the] problem [that fluorine atoms have a residual charge, which makes them polar so they dissolve best in water and so difficult to process them further because any other chemicals added will usually be soluble only in organic solvents] by using supercritical carbon dioxide instead.

30. Martyn Poliakoff and his team at the University of Nottingham, meanwhile, are exploring how SCFs can help them make new industrial catalysts. **31**. They have discovered that they can make organometallic compounds such as metal carbonyls, many of which are too unstable to prepare by conventional methods. **36**. The Nottingham team has found that hydrogen mixes very well with supercritical carbon dioxide at 80-100atmos, allowing the reaction to add hydrogen or nitrogen atoms as needed to the carbonyl compound.

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[102] La oración que cierra el escrito es la número 49, la cual no establece conexiones con ninguna oración. Sin embargo, desde el punto de vista de un científico, la oración concluyente sería la número 46, la cual informa de la última aplicación.
[103] Esta oración, que establece conexiones mediante enlaces dudosos, es necesaria, ya que pertenece al 'cuerpo el texto'.
[104] Las oraciones pertenecientes al 'cuerpo del texto' que no aparecen son las siguientes: 19, 22 y 32. Consideramos que es un resumen del texto, ya que recoge todas las aplicaciones de los fluidos supercríticos y cómo se han superado los problemas anteriores mediante la utilización de los mismos.

37. Once the reaction is over, the SCF can be quickly recycled by releasing the pressure and trapping the carbon dioxide gas that escapes.

45. Scientists are now using SCFs to help them make drugs that normally have to be injected work when taken by mouth instead. **46**. A collaborative team from the US, Canada and Norway has found they can make sub-microscopic particles of the immunosuppressant drug cyclosporin, which is used to prevent transplanted organ rejection, by preparing it in supercritical carbon dioxide and then blasting it into normal water by releasing the pressure.

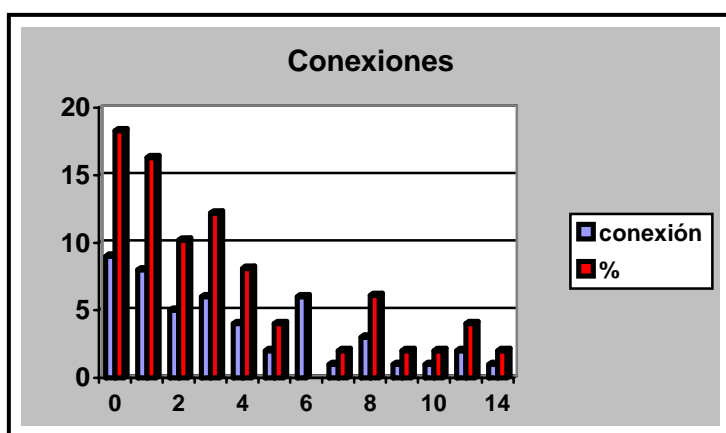1) Gráfica representativa del número de enlaces entre oraciones.
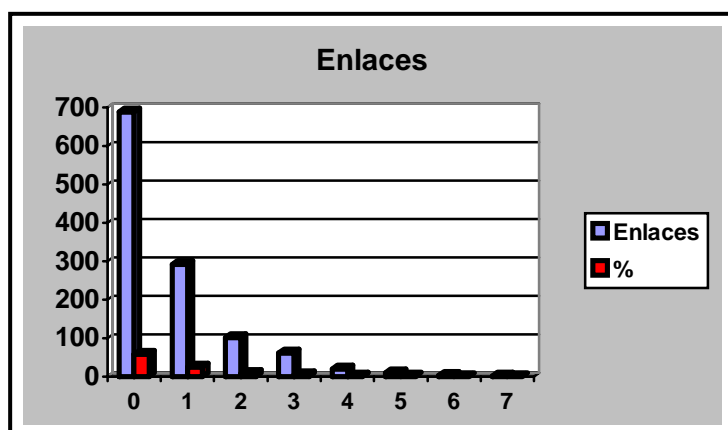
Enlaces	0	1	2	3	4	5	6	7	Total
Celdas	688	292	101	61	20	10	3	1	1176
%	58'5	24'8	8'5	5'1	1'7	0'8	0'2	0'08	99'7

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

_____
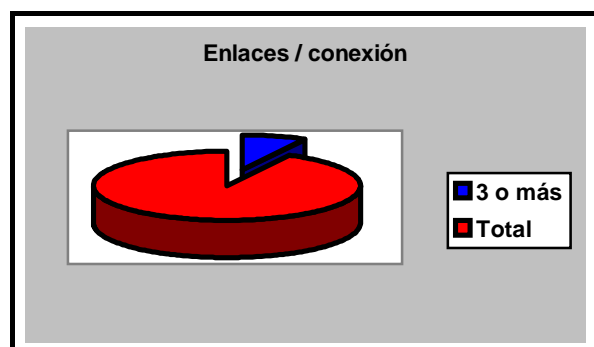
Menos de 3	%	A partir de 3	%
1076	91'4	100	8'5

3) Gráfica representativa del número de conexiones y número de oraciones.

Nº Conexiones	Nº Oraciones	%
0	9	18'3
1	8	16'3
2	5	10'2
3	6	12'2
4	4	8'1
5	2	4
6	6	12'2
7	1	2
8	3	6'1
9	1	2
10	1	2
11	2	4
14	1	2
Total	49	99'4

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Conexiones / oraciones centrales

- menos de 6
- a partir de 6
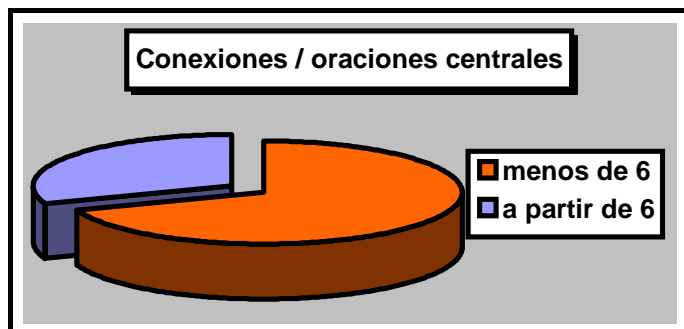
Menos de 6	%	A partir de 6	%
34	69'3	15	30'6

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente

- oraciones
- %

| centrales | concluyente |
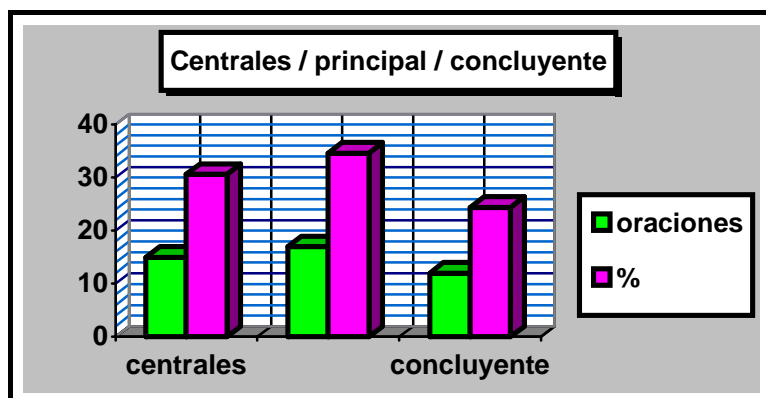
Tipo de oraciones	Nº oraciones	Total	%
Centrales	15	49	30'6
Principal	17	49	34'6
Concluyente	12	49	24'4

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	512	104	63	0	1	36	85	57	16	0	0	6	880
%	58'1	11'8	7'1	0	0'1	4	9'6	6'4	1'8	0	0	0'6	99'5

5. 2. 8. Texto 8: *A healthy spread*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 3, 11, 13, 16, 18, 25, 27, 30, 32, 34, 36 y 43[105]. Por lo tanto, tendremos en cuenta 10 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 8. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 3, 4 (dudosa)[106] 7, 11, 13, 16, 17[107] (dudosa), 18, 25, 27, 30, 32, 34, 36, 43 (dudosa)[108] y 47[109].

3. While reducing elevated cholesterol levels cannot guarantee a healthy heart, scientists and doctors agree that it can reduce the risk of problems.

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[105] La oración 3 introduce el tema justificando la importancia de reducir los niveles de colesterol. Las oraciones 11 y 13 especifican qué tipo de lipoproteínas aumentan los niveles de colesterol. Las oraciones 16 y 18 informan sobre los tipos de alimentos que incrementan el colesterol. A partir de esta breve introducción, el autor nos ofrece tres variantes que actualmente se utilizan para ayudar a descender los niveles de colesterol. La primera, utilizar sustitutivos de la grasa para reducir su ingesta, expresado en la oración 25. La segunda, adición de ingredientes, en las oraciones 27 y 30. Por último, productos manufacturados, oraciones 32 y 34. El texto concluye en la oración 47, señalando la continuidad de investigaciones sobre la reducción de los niveles de colesterol.

[106] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.

[107] Esta oración, que establece conexiones mediante enlaces dudosos, tampoco es necesaria, ya que no pertenece al 'cuerpo del texto'.

[108] Esta oración, que establece conexiones mediante enlaces dudosos, es necesaria, ya que pertenece al cuerpo del 'texto'.

[109] La introducción de las oraciones 7 y 47 aporta información adicional sin interrumpir el argumento del resumen.

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7. Reducing cholesterol in our diet <s>\<therefore\></s> has only a modest effect on lowering blood cholesterol levels.

11 Low density lipoproteins (LDLs), <s>\<for example,\></s> supply cholesterol to cells, increased levels of which are associated with atherosclerosis - ie an accumulation of lipids in plaques on artery walls, which narrows the arteries and restricts the blood flow to the heart (ischaemia) and brain (stroke). **13**. To reduce the risk of heart disease, people therefore need to lower both their total cholesterol levels and their LDL-cholesterol levels in the plasma.

16. Animal fats, in butter for example, consist of a relatively high proportion of saturated fatty acids, some of which according to Judy Donnelly, nutritional biochemist at Trinity and All Saints University College Leeds, 'increase the proportion of LDL-cholesterol in the blood, compared with HDL-cholesterol. **18**. In contrast, vegetable oils, such as those found in margarines, consist of long-chain polyunsaturated and monounsaturated fatty acids, which are associated with lowering LDL-cholesterol levels.

25. <u>\<Such compounds\></u> [synthetic replacements to animal fats, or 'structural fatitutes',] provide many similar properties, [to saturated fatty acids] such as taste and texture, but they are not digested or absorbed from the gut into the blood and therefore cannot raise LDL-cholesterol levels.

27. In the past few years the focus of research has shifted to adding ingredients (nutraceuticals) to food to reduce LDL-cholesterol levels. **30**. Over the years scientists have come to realise that [plant sterols, and their hydrogenated counterparts, stanols] <s>\<these compounds\></s> are very effective at lowering LDL-cholesterol levels when sufficient is eaten, for example in rich fat spreads.

32. Two fat spreads – Benecol and Flora Proactive – are currently on the market for reducing LDL-cholesterol levels. **34**. Clinical trials, on people with elevated cholesterol levels, have shown that these products reduce total plama cholesterol levels and LDL-cholesterol levels by 8-13 per cent, without effecting HDL levels.

36. According to Donnelly, there are two mechanisms by which <s>\<these compounds\></s> [stanol esters and sterol esters] are thought to lower cholesterol levels. **43**. 'These mechanisms [the cholesterol molecules and the sterols/stanols coprecipitate into a solid crystalline form which cannot be absorbed by the gut and the plant sterols and stanols compete with cholesterol to get into the micelles, which limits the amount of cholesterol that can be absorbed] do not just reduce the absorption of dietary cholesterol', said Donnelly, 'but they also hinder reabsorption of some of the cholesterol produced by the body, which has been used in producing bile salts'.

47. Cholesterol-lowering spreads are some of the first functional foods on the market, but scientists are continually identifying ingredients that have potential health benefits.

5. 2. 8. 2. Resumen del texto a partir de la oración principal.

La oración 3 es la oración principal y es la que establece más conexiones con las oraciones posteriores. Sin embargo, no ofrece un resumen del texto, ya que conexiona con la oración 36, la cual señala que existen dos mecanismos por los que estos compuestos descienden el nivel de colesterol, pero no conexiona con las oraciones que nos informan sobre dichos mecanismos.

La oración 7 se puede considerar también como la introductoria del tema, ya que el objetivo del texto es informar sobre los avances producidos en la elaboración de sustancias que descienden el nivel de colesterol. Esta oración es la que, después de la 3, presenta más conexiones con las oraciones posteriores. Las oraciones 3, 4, 7, 8, 11, 13, 15, 16, 17 (dudosa)[110], 18, 25, 27, 30, 32, 34, 36, 43, y 46[111] constituyen un resumen.

3. While reducing elevated cholesterol levels cannot guarantee a healthy heart, scientists and doctors agree that it can reduce the risk of problems. **4**. Here we consider how this can be done through dietary considerations, by reducing the use of food components that raise cholesterol and by adding cholesterol-lowering ingredients – ie functional foods or 'nutraceuticals'.

7. Reducing cholesterol in our diet <therefore> has only a modest effect on lowering blood cholesterol levels. **8**. Scientists therefore considered which other components in food have a significant effect on cholesterol levels.

11 Low density lipoproteins (LDLs), <for example,> supply cholesterol to cells, increased levels of which are associated with atherosclerosis - ie an accumulation of lipids in plaques on artery walls, which narrows the arteries and restricts the blood flow to the heart (ischaemia) and brain (stroke). **13**. To reduce the risk of heart disease, people therefore need to lower both their total cholesterol levels and their LDL-cholesterol levels in the plasma.

15. <They> [dietary fats, both animal and vegetable,] are the major food constituents known to have a significant effect on cholesterol levels. **16**. Animal fats, in butter for example, consist of a relatively high proportion of saturated fatty acids, some of which according to Judy Donnelly, nutritional biochemist at Trinity and All Saints University College Leeds, 'increase the proportion of LDL-cholesterol in the blood, compared with HDL-cholesterol. **18**. In contrast, vegetable oils, such as those found in margarines, consist of long-chain polyunsaturated and monounsaturated fatty acids, which are associated with lowering LDL-cholesterol levels.

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[110]   Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.
[111]   Este resumen contiene todas las oraciones pertenecientes al 'cuerpo del texto'.

25. <Such compounds> [synthetic replacements to animal fats, or 'structural fatitutes',] provide many similar properties, [to saturated fatty acids] such as taste and texture, but they are not digested or absorbed from the gut into the blood and therefore cannot raise LDL-cholesterol levels.

27. In the past few years the focus of research has shifted to adding ingredients (nutraceuticals) to food to reduce LDL-cholesterol levels. **30**. Over the years scientists have come to realise that [plant sterols, and their hydrogenated counterparts, stanols] <these compounds> are very effective at lowering LDL-cholesterol levels when sufficient is eaten, for example in rich fat spreads.

32. Two fat spreads – Benecol and Flora Proactive – are currently on the market for reducing LDL-cholesterol levels. **34**. Clinical trials, on people with elevated cholesterol levels, have shown that these products reduce total plama cholesterol levels and LDL-cholesterol levels by 8-13 per cent, without effecting HDL levels.

36. According to Donnelly, there are two mechanisms by which <these compounds> [stanol esters and sterol esters] are thought to lower cholesterol levels. **43**. 'These mechanisms [the cholesterol molecules and the sterols/stanols coprecipitate into a solid crystalline form which cannot be absorbed by the gut and the plant sterols and stanols compete with cholesterol to get into the micelles, which limits the amount of cholesterol that can be absorbed] do not just reduce the absorption of dietary cholesterol', said Donnelly, 'but they also hinder reabsorption of some of the cholesterol produced by the body, which has been used in producing bile salts'. **46**. Essentially more of the cholesterol produced has to go in to producing more bile salts, reducing the amounts in the blood plasma.

5. 2. 8. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 47 y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 3, 4, 6, 8, 13, 16, 17 (dudosa)[112], 18, 24, 25, 27, 28, 30, 32, 34, 35, 47 y 48[113] constituyen un resumen.

3. While reducing elevated cholesterol levels cannot guarantee a healthy heart, scientists and doctors agree that it can reduce the risk of problems. **4**. Here we consider how this can be done through dietary considerations, by reducing the use of food components that

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[112]   Esta oración, que establece conexiones mediante enlaces dudosos no es necesaria, ya que no pertenece al 'cuerpo del texto'.
[113]   Las oraciones pertenecientes al 'cuerpo del texto' que no están presentes en este resumen son: 11, 36 y 43. Aún así, este resumen se considera válido, ya que nos informa sobre las tres variantes que actualmente se utilizan para descender el nivel de colesterol.

raise cholesterol and by adding cholesterol-lowering ingredients – ie functional foods or 'nutraceuticals'.

6. Research suggests that if a healthy adult absorbs ca 80 mg day of cholesterol from foods such as animal products and eggs, the liver synthesises ca nine times as much (ca 720 mg day). **8**. Scientists therefore considered which other components in food have a significant effect on cholesterol levels.

13. To reduce the risk of heart disease, people ~~<therefore>~~ need to lower both their total cholesterol levels and their LDL-cholesterol levels in the plasma.

16. Animal fats, in butter for example, consist of a relatively high proportion of saturated fatty acids, some of which according to Judy Donnelly, nutritional biochemist at Trinity and All Saints University College Leeds, 'increase the proportion of LDL-cholesterol in the blood, compared with HDL-cholesterol. **18**. In contrast, vegetable oils, such as those found in margarines, consist of long-chain polyunsaturated and monounsaturated fatty acids, which are associated with lowering LDL-cholesterol levels.

24. To improve the acceptability of low fat spreads, researchers are investigating synthetic replacements to animal fats, or 'structural fatitutes'. **25**. Such compounds provide many similar properties, such as taste and texture, but they are not digested or absorbed from the gut into the blood and therefore cannot raise LDL-cholesterol levels.

27. In the past few years the focus of research has shifted to adding ingredients (nutraceuticals) to food to reduce LDL-cholesterol levels. **28**. Since the early 1950s scientists have known that plant sterols, and their hydrogenated counterparts, stanols, have cholesterol-lowering properties. **30**. Over the years scientists have come to realise that these compounds are very effective at lowering LDL-cholesterol levels when sufficient is eaten, for example in rich fat spreads.

32. Two fat spreads – Benecol and Flora Proactive – are currently on the market for reducing LDL-cholesterol levels. **34**. Clinical trials, on people with elevated cholesterol levels, have shown that these products reduce total plama cholesterol levels and LDL-cholesterol levels by 8-13 per cent, without effecting HDL levels. **35**. Both products appear to have no adverse health effects and are non-toxic even in high doses, though a few people with the rare condition, phytosterolaemia cannot metabolise sterols and should avoid them.

47. Cholesterol-lowering spreads are some of the first functional foods on the market, but scientists are continually identifying ingredients that have potential health benefits. **48**. As new advances in food technology allow their incorporation into products, we will see a lot more on the supermarket shelves.
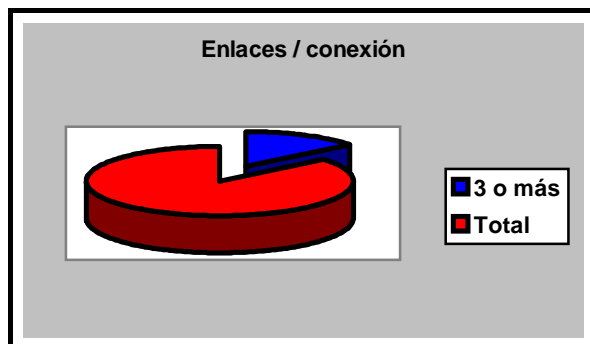
1) Gráfica representativa del número de enlaces entre oraciones.
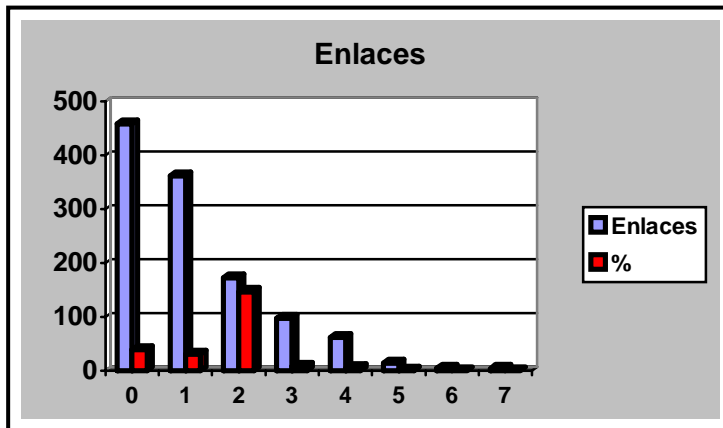
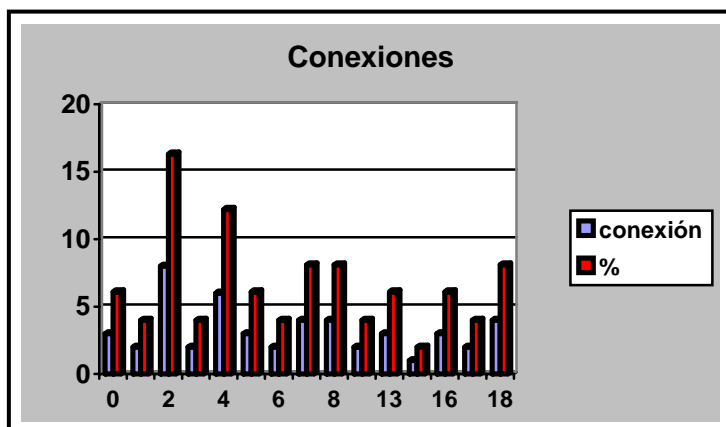| Enlaces	0	1	2	3	4	5	6	7	Total
Celdas	458	362	173	98	62	14	5	4	1176
%	38'9	30'7	14'7	8'3	5'2	1'1	0'4	0'3	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.
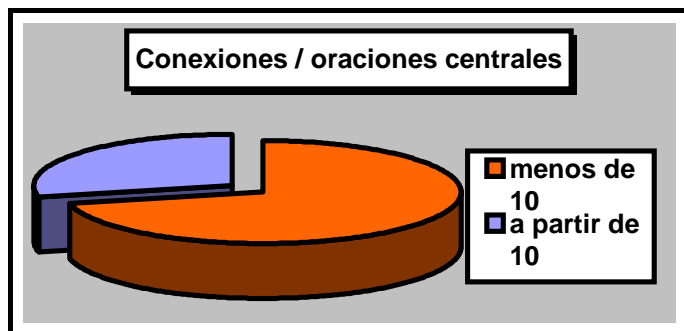

Menos de 3	%	A partir de 3	%
983	83'5	193	16'4

3) Gráfica representativa del número de conexiones y número de oraciones.

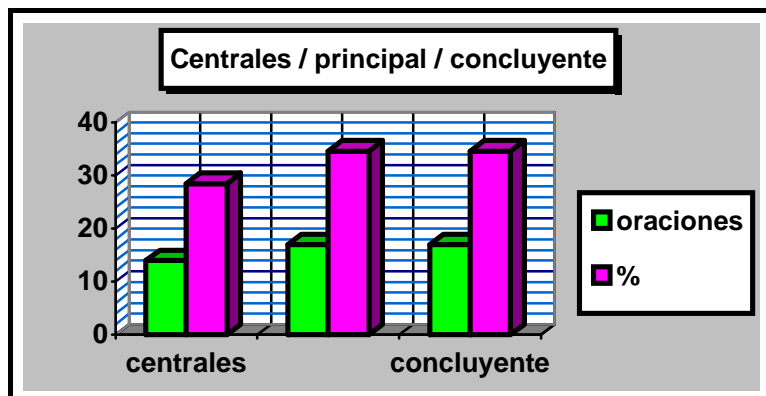| Nº Conexiones	Nº Oraciones	%
0	3	6'1
1	2	4
2	8	16'3
3	2	4
4	6	12'2
5	3	6'1
6	2	4
7	4	8'1
8	4	8'1
9	2	4
13	3	6'1
15	1	2
16	3	6'1
17	2	4
18	4	8'1
Total	49	99'2

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 10	%	A partir de 10	%
35	71'4	14	28'5

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Tipo de oraciones	Nº oraciones	Total	%
Centrales	14	49	28'5
Principal	17	49	34'6
Concluyente	17	49	34'6

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	1085	90	117	0	64	30	45	17	7	0	0	1	1456
%	74'5	6'1	8	0	4'3	2	3	1'1	0'4	0	0	0'06	99'5

5. 2. 9. Texto 9: *Apatite for destruction*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 5, 10, 13 y 15.[114] Tendremos en cuenta 5 conexiones para establecer las oraciones centrales.

5. 2. 9. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 5, 6, 10, 13, 15 y 16 (dudosa)[115].[116]

5. <However,> scientists at the Natural History Museum believe they have found a cost-effective solution to treating heavy metal pollution by using bone-meal.

6. Their method, presented by Dr Eugenia Valsami-Jones, at the BA festival of science, in London in September, involves 'immobilising' polluting metals as insoluble phosphates.

10. It is the hydroxyapatite, $[(Ca_{10} (PO_4)_6 OH_2]$ with phosphate ions locked in its crystal structure, that allows bone-meal to trap heavy metals. **13**. <Secondly,> free phosphate ions [released from bone-meal dissolved in the pore/rain water] react with the metal pollutant, forming insoluble metal phosphates.

15. Lab trials of bone-meal as a treatment for heavy metal pollution at the Natural History Museum using Scanning Electron Microscopy (SEM) confirm the formation of metal phosphate minerals with aluminium, copper, zinc, cadmium, nickel, lead and uranium.

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[114] La oración 5 introduce el tema informándonos sobre un nuevo método para tratar la contaminación producida por metales. Las oraciones 10 y 13 explican el método. Por último, la oración 15 concluye señalando la validez del mismo.

[115] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.

[116] La introducción de la oración 6 no interrumpe el argumento, sino que lo amplia indicando en qué consiste el nuevo método, que queda explicado en la 13.

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5. 2. 9. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 5[117] y es la que presenta más conexiones con las oraciones posteriores. Sin embargo, no ofrece un resumen, ya que está conectada con la oración 11, que informa de que el tratamiento está basado en dos reacciones, y no con la oración 13, que explica estas reacciones.

La oración 6 es la que presenta más conexiones con las oraciones posteriores, después de la oración 5. Sin embargo, tampoco presenta un resumen, ya que no establece conexiones con la 10, que nos indica el elemento que permite atrapar a los metales contaminantes.

5. 2. 9. 3. Resumen del texto a partir de la oración 'circular principal' .

La 'oración circular' principal es la 10[118] y es la que establece más conexiones con las oraciones posteriores, después de la oración 5. Las oraciones 5, 10, 12, 13, 14, y 15 constituirían un resumen. En este caso se puede elevar el número de enlaces a 4, lo cual nos permite obtener un resumen sólo con las oraciones 5, 10, 12, 13 y 15.[119]

5. <However,> scientists at the Natural History Museum believe they have found a cost-effective solution to treating heavy metal pollution by using bone-meal.

10. It is the hydroxyapatite, $[(Ca_{10}(PO_4)_6OH_2)]$ with phosphate ions locked in its crystal structure, that allows bone-meal to trap heavy metals. **12**. First, on mixing with soil, bone-meal dissolves in the pore/rain water, releasing phosphate ions from the crystal structure, along with calcium ions and some hydroxide ions. **13**. Secondly, free phosphate ions react with the metal pollutant, forming insoluble metal phosphates. **15**. Lab trials of bone-meal as a treatment for heavy metal pollution at the Natural History Museum using Scanning Electron Microscopy (SEM) confirm the formation of metal phosphate minerals with aluminium, copper, zinc, cadmium, nickel, lead and uranium.

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[117] Puede considerarse esta oración como principal, ya que introduce el tema del escrito.
[118] Esta oración es la que inicia la descripción de la reacción que permite atrapar los metales contaminantes
[119] Este resumen contiene las oraciones del 'cuerpo del texto'.

5. 2. 9. 4. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 15[120] y es la que presenta más conexiones con las oraciones anteriores. Las oraciones 2, 5, 6, 10, 11, 12, 13, 14, 15, 16 (dudosa)[121] y 17 constituyen un resumen. En este caso, es posible elevar el número de enlaces hasta 5, lo cual nos permite obtener un resumen sólo con las oraciones 5, 10, 13, 15 y 17.[122]

5. ~~However,~~ scientists at the Natural History Museum believe they have found a cost-effective solution to treating heavy metal pollution by using bone-meal.

10. It is the hydroxyapatite, $[(Ca_{10} (PO_4)_6 OH_2]$ with phosphate ions locked in its crystal structure, that allows bone-meal to trap heavy metals. **13**. ~~Secondly,~~ free phosphate ions [released from bone-meal dissolved in the pore/rain water] react with the metal pollutant, forming insoluble metal phosphates.

15. Lab trials of bone-meal as a treatment for heavy metal pollution at the Natural History Museum using Scanning Electron Microscopy (SEM) confirm the formation of metal phosphate minerals with aluminium, copper, zinc, cadmium, nickel, lead and uranium.

17. 'In the future, we hope to see the method being used and contributing to the improvement of the lives of people affected by heavy metal pollution', said Dr Valsami-Jones.

1) Gráfica representativa del número de enlaces entre oraciones.

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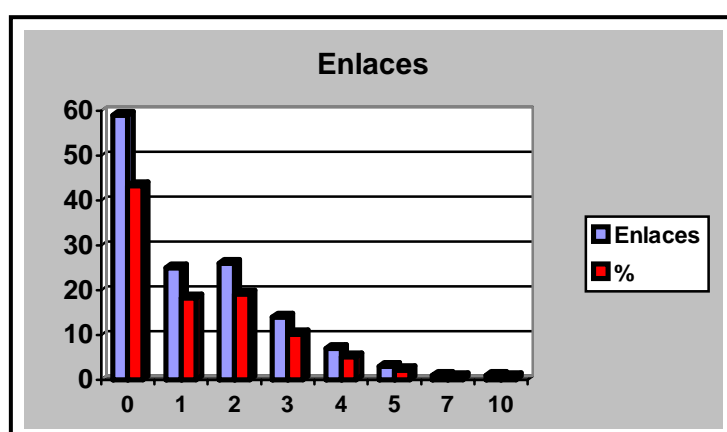
[120] Puede considerarse esta oración como concluyente, ya que informa sobre la aplicabilidad del método.

[121] Esta oración, que establece conexiones mediante enlaces dudosos, no es necesaria, ya que no pertenece al 'cuerpo del texto'.
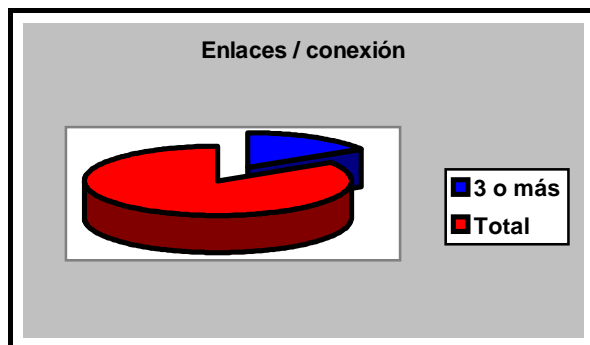
[122] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

Resultados
_____
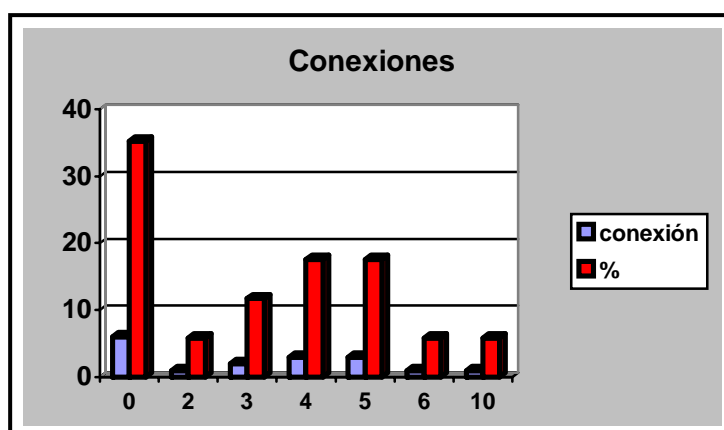
Enlaces	0	1	2	3	4	5	7	10	Total
Celdas	59	25	26	14	7	3	1	1	136
%	43'3	18'3	19'1	10'2	5'1	2'2	0'7	0'7	99'6

2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.
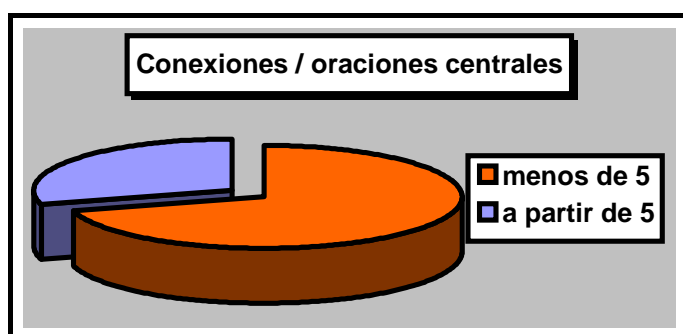

Menos de 3	%	A partir de 3	%
110	80'8	26	19'1

3) Gráfica representativa del número de conexiones y número de oraciones.

246

Nº Conexiones	0	2	3	4	5	6	10	Total
Nº Oraciones	6	1	2	3	3	1	1	17
%	35'2	5'8	11'7	17'6	17'6	5'8	5'8	99'5

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 5	%	A partir de 5	%
12	70'5	5	29'4

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

247
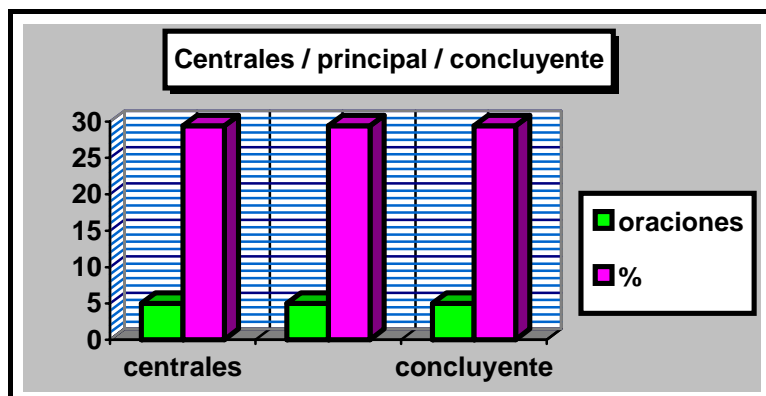
Tipo de oraciones	N° oraciones	Total	%
Centrales	5	17	29'4
Circular P	5	17	29'4
Concluyente	5	17	29'4

6) Tabla representativa de los tipos de reiteración léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Número	130	20	9	0	1	9	18	0	1	0	0	0	188
%	69'1	10'6	4'7	0	0'5	4'7	9'5	0	0'5	0	0	0	99'6

5. 2. 10. Texto 10: *Hair-raising ideas*: Oraciones pertenecientes al 'cuerpo del texto'.

Las oraciones pertenecientes al 'cuerpo del texto' son: 2, 5, 12 y 15[123]. Tendremos en cuenta 4 conexiones como mínimo para establecer las oraciones centrales.

5. 2. 10. 1. Resumen del texto con las oraciones centrales.

Las oraciones centrales son: 2, 5, 7, 12 y 15[124].

2. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime.
5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile [than inspecting it under microscope].
7. Recent analyses of a variety of hair samples using the approach have revealed that the

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[123] La oración 2 introduce el objetivo del escritor: presentar dos nuevos métodos. El primero expresado en la oración 5 y el segundo en las oraciones 12 y 15.
[124] La introducción de la oración 7 no interrumpe el argumento, ya que nos indica la aplicación práctica del primer método.

technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

12. Conventional procedures for detecting <~~these drugs~~> [amphetamines, which includes increasingly common drugs such as MDMA (Ecstacy] in blood and urine samples are notoriously time-consuming and involve a two step process that involves liquid-liquid or solid-phase extraction followed by lengthy derivatisation of the drugs to make analogues suitable for GC-MS analysis.

15. Morrison has already applied <~~a similar technique~~> [extraction and derivatisation in one step using SFCO$_2$] for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists.

5. 2. 10. 2. Resumen del texto a partir de la oración principal.

La oración principal es la 2[125] y es la que establece más conexiones con las oraciones posteriores. Las oraciones 2, 3, 5, 7, 12, 15 y 16[126] constituyen un resumen.

2. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime. **3**. Typically, hair samples collected at crime scenes are inspected under microscope to determine colour, thickness and morphology (straightness).

5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile. **7**. Recent analyses of a variety of hair samples using the approach have revealed that the technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

12. Conventional procedures for detecting <~~these drugs~~> [amphetamines, which includes increasingly common drugs such as MDMA (Ecstacy] in blood and urine samples are notoriously time-consuming and involve a two step process that involves liquid-liquid or solid-phase extraction followed by lengthy derivatisation of the drugs to make analogues suitable for GC-MS analysis.

15. Morrison has already applied <~~a similar technique~~> [extraction and derivatisation in one step using SFCO$_2$] for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists. **16**. Not only do they

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[125] Esta oración se puede considerar como principal, ya que introduce el tema indicando la existencia de dos métodos.
[126] Este resumen contiene las oraciones pertenecientes al 'cuerpo del texto'.

promise to catch culprits more quickly, but hair greatly expands the time window for drug detection compared with urine and blood.

5. 2. 10. 3. Resumen del texto a partir de la oración concluyente.

La oración concluyente es la 16^{127} y es una de las que establecen más conexiones con las oraciones anteriores. Sin embargo, no ofrece un resumen del texto, ya que sólo nos informa del segundo método.

5. 2. 10. 4. Resumen del texto a partir de la 'oración circular' concluyente 1.

La oración 7^{128}, sin ser concluyente del tema del escrito, es una de las que presentan más conexiones con las oraciones anteriores. Las oraciones 2, 3, 5, 7 y 15^{129} constituyen un resumen.

2. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime. **3**. Typically, hair samples collected at crime scenes are inspected under microscope to determine colour, thickness and morphology (straightness).

5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile. **7**. Recent analyses of a variety of hair samples using the approach have revealed that the technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

15. Morrison has already applied <a similar technique> [extraction and derivatisation in one step using $SFCO_2$] for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists.

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[127] Se puede considerar esta oración como la que cierra el tema, ya que informa sobre la validez de los dos métodos propuestos.
[128] Esta oración es concluyente de la parte del texto que versa sobre el primer método, ya que expresa su fiabilidad.
[129] Este resumen no incluye la oración 12, perteneciente al 'cuerpo del texto'. No obstante, consideramos válido este resumen, ya que informa sobre los dos métodos.

5. 2. 10. 5. Resumen del texto a partir de la oración 'circular concluyente' 2.

La oración 15, sin ser concluyente, es otra de las que presentan más conexiones con las oraciones anteriores. Las oraciones 2, 5, 7, 15 y 16[130] constituyen un resumen.

2. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime.

5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile [than inspecting it under microscope]. **7**. Recent analyses of a variety of hair samples using the approach have revealed that the technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

15. Morrison has already applied <a similar technique> [extraction and derivatisation in one step using SFCO$_2$] for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists. **16**. Not only do they promise to catch culprits more quickly, but hair greatly expands the time window for drug detection compared with urine and blood.
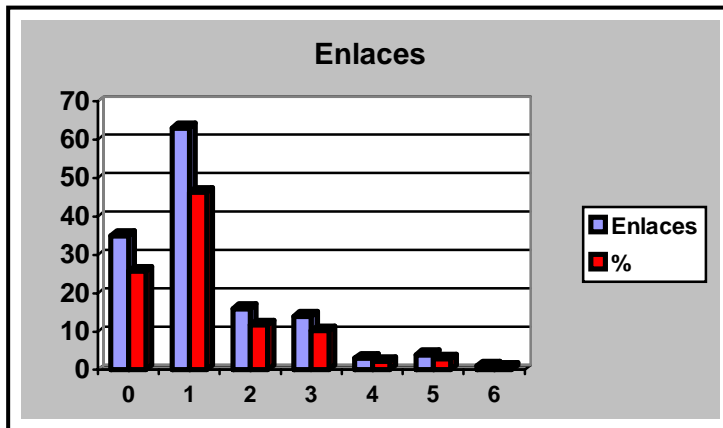
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[130]   Este resumen tampoco incluye la oración 12. Sin embargo, por la misma razón que en el resumen anterior, se considera válido.
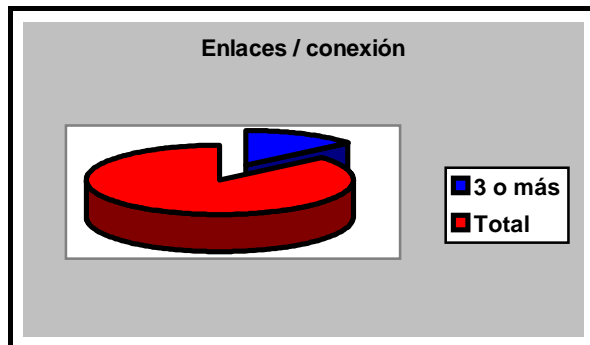
1) Gráfica representativa del número de enlaces entre oraciones.

Enlaces
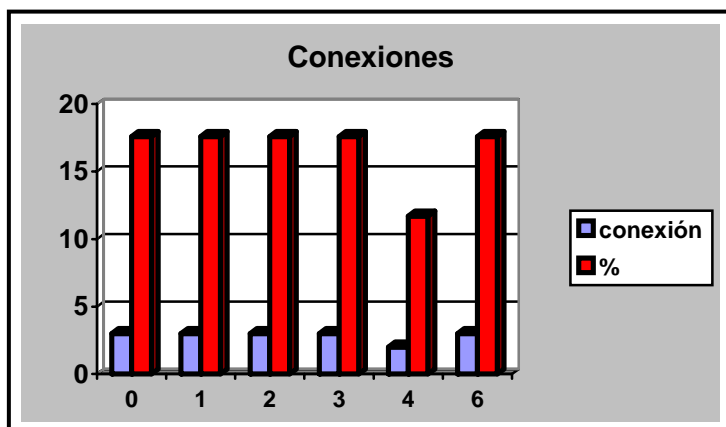

Enlaces	0	1	2	3	4	5	6	Total
Celdas	35	63	16	14	3	4	1	136
%	25'7	46'3	11'7	10'2	2'2	2'9	0'7	99'7

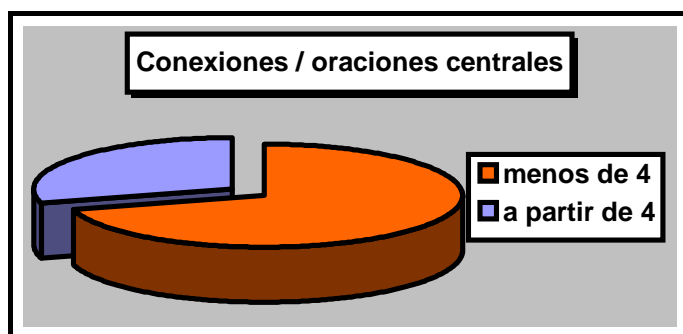2) Gráfica representativa del número de enlaces para establecer conexiones entre oraciones.

Enlaces / conexión

Menos de 3	%	A partir de 3	%
114	83'8	22	16'1

3) Gráfica representativa del número de conexiones y número de oraciones.

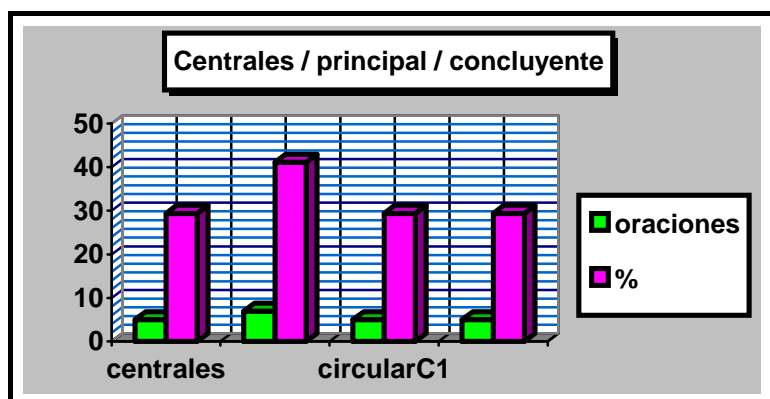| Nº Conexiones	0	1	2	3	4	6	Total
Nº Oraciones	3	3	3	3	2	3	17
%	17'6	17'6	17'6	17'6	11'7	17'6	99'7

4) Gráfica representativa del número de conexiones para establecer las oraciones centrales.

Menos de 4	%	A partir de 4	%
12	70'5	5	29'4

5) Gráfica representativa del número de oraciones que constituyen un resumen del texto.

Centrales / principal / concluyente

Tipo de oraciones	Nº oraciones	Total	%
Centrales	5	17	29'4
Principal	7	17	41'1
Circular C 1	5	17	29'4
Circular C 2	5	17	29'4

6) Tabla representativa de los tipos de repetición léxica.

Tipos de repetición	rs	rc	psm	psp	a	pc	hip	tr	s	co-ref	e	d	Total
Cantidad	123	17	8	0	2	6	6	5	5	3	1	1	177
%	69'4	9'6	4'5	0	1'1	3'3	3'3	2'8	2'8	1'6	0'5	0'5	99'4