Gynecological Endocrinology

ISSN: 0951-3590 (Print) 1473-0766 (Online) Journal homepage: www.tandfonline.com/journals/igye20

An open, single center, clinical investigation to evaluate the efficacy and safety of a non-hormonal vaginal moisturizer for the symptomatic treatment of vulvovaginal atrophy in postmenopausal woman

Manuel Sánchez-Prieto, Nicolás Mendoza, Peter Chedraui, Félix Lugo-Salcedo, Aida Serra-Ribas, Sonia Aladrén-Pérez, Javier Bustos-Santafé & Rafael Sánchez-Borrego

To cite this article: Manuel Sánchez-Prieto, Nicolás Mendoza, Peter Chedraui, Félix Lugo-Salcedo, Aida Serra-Ribas, Sonia Aladrén-Pérez, Javier Bustos-Santafé & Rafael Sánchez-Borrego (2025) An open, single center, clinical investigation to evaluate the efficacy and safety of a non-hormonal vaginal moisturizer for the symptomatic treatment of vulvovaginal atrophy in postmenopausal woman, Gynecological Endocrinology, 41:1, 2500480, DOI: 10.1080/09513590.2025.2500480

To link to this article: https://doi.org/10.1080/09513590.2025.2500480

Published online: 05 May 2025.

GYNECOLOGICAL ENDOCRINOLOGY
2025, VOL. 41, NO. 1, 2500480
https://doi.org/10.1080/09513590.2025.2500480

Taylor & Francis
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS Check for updates

An open, single center, clinical investigation to evaluate the efficacy and safety of a non-hormonal vaginal moisturizer for the symptomatic treatment of vulvovaginal atrophy in postmenopausal woman

Manuel Sánchez-Prieto[a], Nicolás Mendoza[b], Peter Chedraui[b,c], Félix Lugo-Salcedo[a], Aida Serra-Ribas[d], Sonia Aladrén-Pérez[d], Javier Bustos-Santafé[d] and Rafael Sánchez-Borrego[a]

[a]DiaTrecnon, Woman's Clinic, Gynecology and Obstetrics, Teknon Medical Center, Barcelona, Spain; [b]Department of Obstetrics & Gynaecology, Faculty of Medicine, University of Granada, Granada, Spain; [c]Escuela de Postgrado en Salud, Universidad Espíritu Santo, Samborondón, Ecuador; [d]ISDIN, Barcelona, Spain

ABSTRACT

Objective: To evaluate the efficacy and safety of a non-hormonal vaginal moisturizer in alleviating the clinical symptoms of vulvovaginal atrophy (VVA).

Methods: This was an observational, single center, open label study in which the investigational product was applied to postmenopausal women ($n=36$) with VVA symptoms three times per week for a period of 12 weeks. Patient's perception of vaginal discomfort, sexual function improvement assessed with the Female Sexual Function Index (FSFI), quality of life evaluated with the Cervantes-SF scale, and subject's satisfaction with the treatment were evaluated after 4 and 12 weeks of product use. In addition, vaginal health was evaluated with the Vaginal Health Index (VHI) score and the vaginal pH.

Results: A statistically significant decrease was observed in the severity of the most bothersome symptoms from moderate at baseline (mean 2.47 ± 0.55) to mild after 4 weeks (mean 1.33 ± 0.58) and 12 weeks (mean 1.32 ± 0.74, $p<0.0001$). VHI scores significantly improved after 4 and 12 weeks compared to baseline (from 11.70 to 16.36 at 4 weeks and 17.34 at 12 weeks, both $p<0.0001$). Vaginal pH decreased significantly from a mean pH of 6.27 ± 0.46 at baseline to 5.77 ± 0.59 at 4 weeks and 5.56 ± 0.60 at 12 weeks of treatment ($p<0.0001$). Total FSFI scores significantly increased, indicating improvement of sexual function, after 4 and then after 12 weeks of product use (Baseline score 20.16 compared to 24.27 at 4 and 23.94 at 12 weeks, both $p<0.0001$). Quality of life improved (decrease of total Cervantes-SF scores) after 12 weeks of product use as compared to baseline (Baseline 32.09 vs 26.45, $p=0.0004$). At 12 weeks, a 97.5% reported overall satisfaction with the product and no adverse events related to the product were reported.

Conclusion: Through limited size study, the proposed non-hormonal vaginal moisturizer demonstrated being effective and safe for the management of VVA symptoms in postmenopausal women, offering significant improvements in symptom severity, vaginal health, sexual function, and quality of life. There is a need for further research with a larger sample and comparison with other similar products.

ARTICLE HISTORY
Received 6 April 2025
Revised 23 April 2025
Accepted 25 April 2025
Published online 30 April 2025

KEYWORDS
Vulvovaginal atrophy; genitourinary syndrome of menopause; vaginal dryness; dyspareunia; moisturizer

Introduction

Vulvovaginal atrophy (VVA) is a chronic and progressive condition that affects sexual relations and quality of life (QoL) of mid-aged women, especially in those who are sexually active [1,2]. VVA is now included under the new term genitourinary syndrome of menopause (GSM) [3] and represents a component of the syndrome. In a sample of Spanish postmenopausal women, vaginal dryness was the most common symptom of VVA (81%). Although 71% of participants with partners were sexually active, their sex drive was reduced by one-third as a consequence of VVA [4].

VVA can be prevented and treated but requires long-term and often sequential treatment [5,6]. Sequential treatment consists of designing strategies that use one or more medications, preferably at the onset of symptoms and signs of atrophic vaginal changes [7], for as long as necessary to achieve the desired benefits with minimal risk and maximum adherence. Any therapeutic approach should be personalized, and women's preferences be considered because the level of comfort with a given therapy is strongly influenced by a multitude of individual and socio-environmental factors [8]. Non-hormonal strategies may be prescribed in women of any age who do not wish to use hormonal treatments or have contraindications or, as co-treatment, in those who already use systemic/vaginal hormonal options [9,10]. Prescribing vaginal moisturizers and lubricants and maintaining sexual activity may be helpful in improving symptoms related to vaginal dryness [11].

Humectants are bioadhesive substances that lower vaginal pH and moisturize the vaginal mucosa [10] and may also exert a slight trophic effect [12]. They alter the vaginal epithelium by absorbing and adhering to it and mimicking vaginal secretions. The main limitations of using moisturizers is the short-term

CONTACT Rafael Sánchez-Borrego rschez.borrego@diatros.com DiaTrecnon, Woman's Clinic, Gynecology and Obstetrics, Teknon Medical Center, Vilana 12, Barcelona 08022, Spain

relief of symptoms they provide and the fact that they do not reverse atrophy [10]. They are suitable for mild to moderate GSM symptoms and for daily well-being [13]. Women should be informed about which products are suitable to avoid further damage to the vaginal epithelium.

The aim of the present study was to evaluate the efficacy and safety of a non-hormonal vaginal moisturizing product in postmenopausal women with symptoms of VVA.

Methods

Study design and participants

This was an observational, prospective, open label and single center study conducted at DiaTrecnon unit within, Women's Clinic, Department of Obstetrics and Gynecology, Teknon Medical Center Barcelona, Spain. The study protocol was reviewed and approved on March 8th, 2022 (resolution N° 05/2022) by an Independent Ethics Committee of the Quirón Salud-Catalunya Hospital Group (Comité ético de investigación con medicamentos [CEIm]) of the Grupo Hospitalario Quirón Salud-Catalunya), located in Sant Cugat del Vallès, Spain. Informed consent was secured from all participating women. The study adhered to the ethical principles outlined in the Declaration of Helsinki, complied with Good Clinical Practices for Medical Device studies (ISO 14155:2020), and met all applicable regulatory requirement(s). The study is registered with ISRCTN under the number 44865.

Eligible participants were sexually active women ≤75 years who were postmenopausal defined as 12 or more months since last spontaneous menstrual period, or having 6 months of spontaneous amenorrhea with a serum follicle stimulating hormone (FSH) levels >40 IU/L. Women had to have VVA assessed with a Vaginal Health Index score <15 points and a vaginal pH higher than 5.0, in addition to having at least one of the following symptoms of VVA, rated as moderate to severe (2 or more point as described below in the measuring instrument section): vaginal dryness, vulvo and/or vaginal irritation/itching, vaginal/vulvar soreness experienced at least weekly within the past 30 days, or vaginal pain associated with sexual activity at least once monthly.

Exclusion criteria were: clinical signs of vaginal infections and/or any other vaginal disorders, women currently using products for VVA, those treated previously with either oral or topical hormonal products, use of estrogens/progestins products (vaginal, oral, transdermal, subdermal implants, etc) in the previous 6 months prior to study entrance, positive history of hypersensitivity to any component of the proposed investigational product, presence of other malignancies including cervical, ovarian, and uterine cancers, operative history of hysterectomy or oophorectomy, current use of medication for urogynecology problems, unexplained vaginal bleeding, pregnancy or breastfeeding, or having had been treated with any regenerative gynecological technique (laser, radiofrequency or filler insertion).

Intervention

Participants were instructed to apply the investigated non-hormonal moisturizer (Woman ISDIN Vaginal Moisturizer®, 6 ml per applicator) three times per week for 12 weeks. The product contains water, glycerin, glyceryl polyacrylate, petrolatum, liquid paraffin, hydrogenated palm glycerides, sodium hydroxide, carbomer, polyacrylic acid, and methylparaben and was supplied with a single-use applicator to ensure proper and hygienic administration. Each application involved inserting the prescribed amount of the moisturizer into the vaginal canal, preferably at night, to optimize absorption during rest. Instructions on correct usage and hygiene practices were provided during the baseline visit to ensure consistent and effective application across all participants. Study product compliance was monitored using diary card, with data collected for 12 weeks.

Measurement instruments

The primary study endpoint was the evaluation of the most bothersome symptom at 12 weeks. For this, participants were requested to report at baseline the intensity of symptoms commonly associated with VVA (vaginal dryness, vaginal and/or vulvar irritation/itching, vaginal/vulvar soreness and dyspareunia) using a four-point scale (0 = absent, 1 = mild, 2 = moderate, 3 = severe) and then after 4 and then 12 weeks of product use. For each woman, the most bothersome symptom (the one with the highest rating at baseline visit [V0]) was selected and assessed at visit 2 (V2) and visit 3 (V3). The values obtained from each woman were summed up to achieve a mean baseline score which was compared with means scores obtained at V2 and V3. Secondary endpoints were evaluation of VHI, pH, and improvement of female sexual function and QoL at V0, V2 and V3.

Vaginal health was evaluated with the Vaginal Health Index (VHI). This index consists of a clinical analysis during specular examination of a 5-domain questionnaire ranging from 1 (poorest) to 5 (best), regarding overall elasticity, fluid secretion type and consistency, pH, epithelial mucosa, and moisture. The sum of the values of the evaluated parameters results in a total VHI score. Lower scores correspond to greater urogenital atrophy. As mentioned a total VHI score of <15 was defined as VVA and was criteria for inclusion.

Vaginal pH was measured using a pH measuring strip. Smears were collected from the lateral vaginal wall according to laboratory instructions. A vaginal pH higher than 5.0 indicates VVA and was a criteria for inclusion.

The improvement of female sexual function was evaluated with the Female Sexual Function Index (FSFI) tool. This is a self-reported questionnaire composed of 19-items assessing in women six domains of sexual function: 1) desire, 2) arousal, 3) lubrication, 4) orgasm, 5) satisfaction, and 6) pain/discomfort. Each domain uses a 5-likert scale ranging from 1 to 5, with higher scores for each domain and the sum of all domains indicating greater levels of sexual functioning.

QoL improvement was evaluated with the validated short form of the Health-Related Quality of Life scale for menopause (Cervantes-SF scale) [14] that is a 16-item abridged version of the original Cervantes scale of 33 items [15]. Each item of the scale is scored in a six-point Likert scale (i.e. not having symptoms (zero points) and to having maximum severity of the assessed symptom (5 points). The total Cervantes-SF score was calculated summing up values obtained from each of the 16 questions. Higher total scores indicate worse QoL.

Finally, participants evaluated their satisfaction with the product after 12 weeks of use. Satisfaction and local tolerability were assessed using a 7-point Likert scale, ranging from −3 (very dissatisfied) to 0 (neutral) and 3 (very satisfied). Additionally, participants rated the product's cosmetic qualities, and ease of use at V3. Safety, tolerability, and compliance were monitored throughout the study.

Statistical analysis

The statistical analysis was carried out using the SAS program (Statistical Analysis System, version 9.4 for Windows platform). It was initially estimated that 39 participants would be required to detect statistically significance difference between baseline and

Table 1. Demographic and baseline characteristics of participants ($n = 43$).

Characteristics	$n = 43$
Age (years)	58.9 ± 5.5
Ethnicity	
Caucasian	38 (88.4)
Hispanic	5 (11.6)
Physical examination	
Normal	37 (86.0)
Abnormal	2 (4.7)
History of breast cancer	4 (9.3)
Deliveries	
Vaginal	22 (51.1)
Cesarean section	20 (46.5)
Instrumental	2 (4.7)
Habits	
Smoking	5 (11.6)
Alcohol abuse	0 (0)
Other	0 (0)
Sexual habits	
Sexually active	43 (100)
Decreased sexual frequency	43 (100)
Intercourse	39 (90.7)
Masturbation	4 (9.3)
Type of menopause	
Natural	41 (95.3)
Iatrogenic	2 (4.7)
Age at menopause onset (years)	49.7 ± 4.3
Age vulvovaginal atrophy was diagnosed (years)	54.1 ± 4.6
How many years has the patient had 2 or more of symptoms of vulvovaginal atrophy (years)	7.2 ± 5.1
Menopausal symptoms*	
Suffocations/hot flashes	30 (69.8)
Sleep problems	19 (44.2)
Night sweats	19 (44.2)
Tachycardia sensation	10 (23.2)
Dry skin	28 (65.1)
Irregular menstrual periods	5 (11.6)
Mood changes	8 (18.6)
Vaginal dryness	37 (86.0)
Need to urinate often	15 (34.9)
Recurrent urinary tract infections	5 (11.6)
Urinary incontinence	6 (14.0)
Discomfort during intercourse	31 (72.1)
Decreased vaginal lubrication during sexual activity	34 (79.1)
Weight gain and slow metabolism	15 (34.9)
Thinning hair	14 (32.6)

Data are presented as mean ± standard deviations or frequencies *n* (%).
* Listed menopausal symptoms are not the same as those assessed with the Cervantes-SF scale.

12-weeks evaluations concerning the improvement of the most bothersome reported symptoms in 50% of the patients, with a significance level (alpha) of 0.05000 and 80% statistical power. Therefore, assuming a 10% loss, a total of 43 patients were included in the study. Continuous variables have been described by the number of valid cases, mean and standard deviation (SD). On the other hand, the categorical variables have been described by absolute and relative frequencies of each category on the total of valid values (*n*). All analyses were performed on the data set using all available information only with the Full Analysis Set (FAS) criteria. Differences were considered statistically significant if the *p* value was <0.05.

Results

From May 2022 to April 2023, a total of 44 women were screened for eligibility. One subject was a screening failure (not complying with the inclusion criteria of postmenopausal status). Therefore, a total of 43 subjects were included in the study. Seven withdrew prior to completing the study due to personal reasons. A total of 36 women completed the study. Baseline characteristics of the 43 women who were initially included are shown in Table 1. Mean age was 58.9 years, with a mean age at menopause onset of 49.7 years. Vaginal dryness was present in 86.0%, dyspareunia in 72.1% and decreased lubrication in 79.1%.

The study demonstrated that the proposed non-hormonal vaginal moisturizer statistically decreased the mean score of the most bothersome symptoms VVA reported by women at baseline and then following 4 and 12 weeks of use. The most bothersome symptom was reported as moderate intensity (mean 2.47 ± 0.55) at baseline, and after the use of the proposed vaginal moisturizer, the intensity decreased significantly to mild (1.33 ± 0.58) at V2, improvement that was maintained until V3 (1.32 ± 0.74; $p < 0.0001$, for both; Figure 1).

All symptoms of VVA (assessed as scores), including vaginal dryness, vaginal and/or vulvar irritation/itching, vaginal/vulvar soreness, and dyspareunia showed statistically significant ($p < 0.0001$) improvements at V2 and V3 (scores decreased). Changes in the scores of each symptom are shown in Figures 2 and 3. The two most highly rated symptoms at baseline were dyspareunia (mean 2.19 points) and vaginal dryness (mean 1.93 points).

Regarding VHI evaluation, the proposed vaginal moisturizer significantly improved total VHI score at V2 and V3. Total VHI score increased 4.56 ± 3.99 points at V2 and then 5.68 ± 3.83

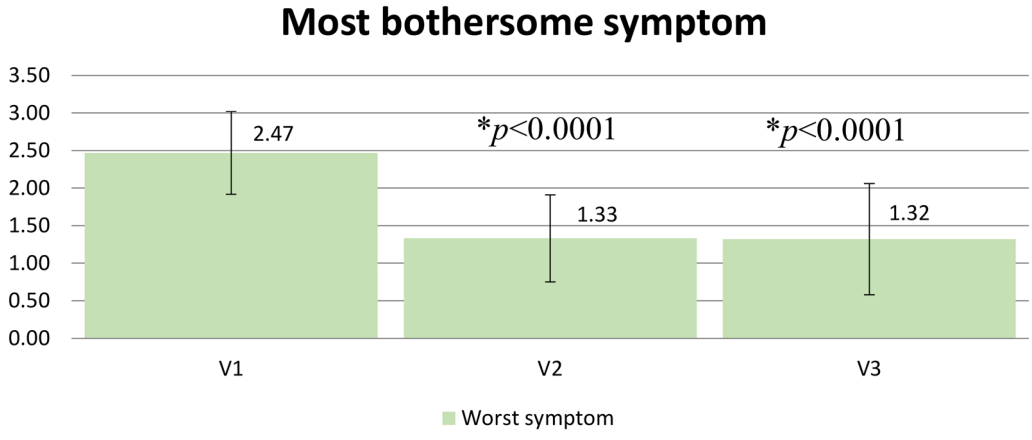

Figure 1. Mean value of the most bothersome symptom at baseline and after treatment*.
* At baseline analysis was performed on the full sets ($n = 43$).

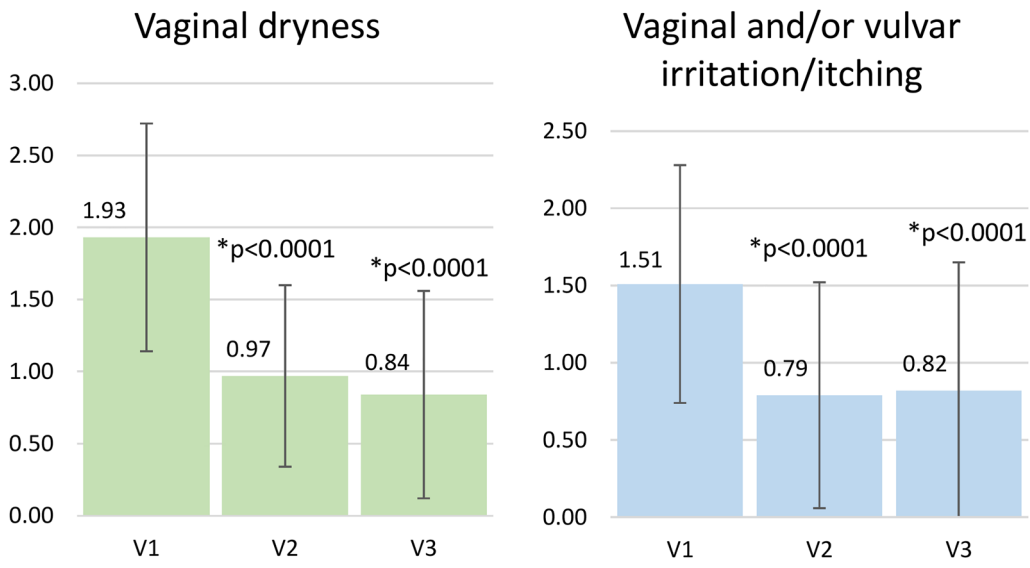

Figure 2. Vaginal dryness score (left) and vaginal and/or vulvar irritation/itching score (right)*.
* At baseline analysis was performed on the full set ($n = 43$).

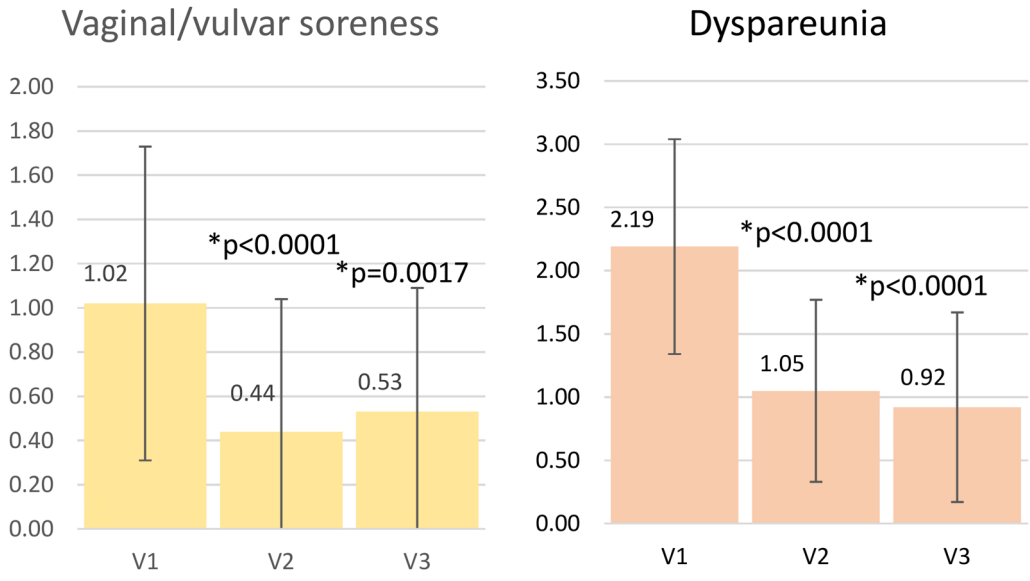

Figure 3. Vaginal/vulvar soreness score (left) and dyspareunia score (right)*.
* At baseline analysis was performed on the full set ($n = 43$).

points at V3, compared to baseline. Results are shown in Figure 4. Vaginal pH values were significantly ($p < 0.0001$, both) decreased from 6.27 ± 0.46 at baseline to 5.77 ± 0.59 at V2 and to 5.56 ± 0.60 at V3 (Data not shown in Figures).

Total FSFI scores significantly increased, indicating improvement of sexual function, after 4 and then after 12 weeks of product use (Baseline score 20.16 compared to 24.27 at V2 and 23.94 at V3, both $p < 0.0001$; values not shown in Figures).

Regarding the QoL of the participants, as evaluated with the total score of the Cervantes-SF, there was a statistically significant improvement (decrease of total score) after using the product 12 weeks as compared to baseline (Baseline 32.09 vs 26.54 at V3, $p = 0.0004$) (Data not shown in Figures).

After 12 weeks of product use (V3), 97.5% reported overall satisfaction and tolerability with the product. In addition, 100% were satisfied with the product's texture and aroma, 97.4% found the product easy to use, and 97.3% rated the product as excellent or good in terms of comfort, hygiene, and ease of insertion, while 89.5% were satisfied with the minimal vaginal discharge observed.

Finally, 16 subjects reported adverse events during the study, none of which were serious. All events were classified as either mild or moderate in severity. Five moderate adverse events related to GSM were reported in three subjects: these included cases of cystitis, vaginitis, vaginal itching and shaving-related injuries. Other mild reported adverse events related to GSM included cystitis, urinary tract infection and adnexa uteri pain. Importantly, all reported adverse events were assessed by the investigator as unrelated to the investigational product as they resolved completely without sequelae.

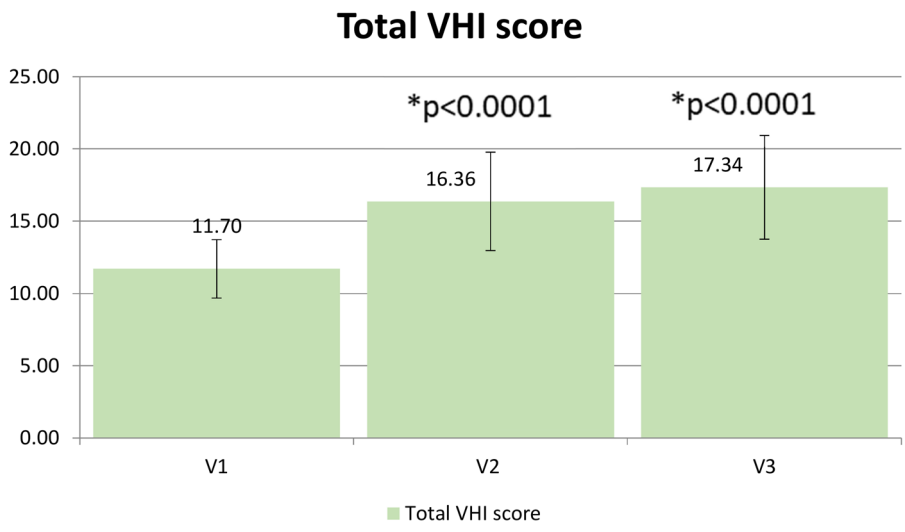

Figure 4. Total VHI scores at the different moments of evaluation*.
* At baseline analysis was performed on the full set ($n = 43$).

Discussion

The present observational study demonstrated an improvement of all and the most bothersome symptom of VVA following 4 and 12 weeks of treatment with the proposed non-hormonal vaginal moisturizer. Additionally, improvements in vaginal health, pH, and female sexual function were also demonstrated at 4 and 12 weeks. Finally, at 12 weeks QoL of participants was improved as demonstrated by an increase of Cervantes-SF total scores. No safety concerns were observed.

Although there are many commercially available vaginal moisturizers, little is known about their relative safety and efficacy. A few, small prospective studies have examined the efficacy of commonly used vaginal moisturizers. Consistent with our efficacy results, a water-based polycarbophil vaginal moisturizer has been shown to improve symptoms of VVA [16,17]. Likewise, a hyaluronic acid vaginal moisturizer has shown to improve the clinical symptoms of vaginal dryness in postmenopausal women, with no significant difference in efficacy versus an estriol cream [18,19].

Women are poorly aware that VVA is a chronic condition with a significant impact on sexual health and QoL and that effective and safe treatments are available [20]. It is estimated that menopausal women with female sexual dysfunction have a 3.84-fold higher possibility of having GSM than those without [21]. In the present study, sexual function, as evaluated with the FSFI, was significantly improved (increased total scores) at 4 and 12 weeks as compared to baseline. In addition, except for satisfaction all other domains (desire, arousal, lubrication, orgasm, and pain) evaluated with this tool presented significant improvements after 4 and 12 weeks of use compared to baseline (Data not shown in Figures).

Regarding QoL, a statistically significant improvement was observed at 12 weeks compared to baseline (decrease of total Cervantes's scores). In this sense, interesting to note is that our participants had a mean of 7.2 years complaining of VVA symptoms. Hence, once it has been established that a woman is experiencing symptoms of VVA, it is important to ensure that she understands that the condition is progressive and that their QoL can be impaired if not treated [7]. Furthermore, with the diversity of vaginal moisturizing formulations and preparations comes the importance of educating women on the proper administration, as many of these therapies have different dosages, timing, and application regimens. Unlike gels, water-based creams like the investigated product are advantageous because they not only increase the moisture content of the skin, but also provide lipids to dry, friable, and sensitive atrophic skin. Therefore, the same water-based preparation may improve symptoms depending on whether it is placed to the introitus, or the vagina [22].

In terms of patient satisfaction with the product and local tolerability the present study found positive feedback at the final evaluation endpoint. In addition, participants rated highly the product's features, including its ease of insertion, its comfort and the fact that vaginal loss of the product in their underwear (one of the most frequent reasons for discontinuing treatment) was minimal.

We acknowledge the limitations of this open, single-center, clinical investigation. This study lacked a control arm or comparison group. Furthermore, the results of the analyses in this trial are limited due to the methods used to diagnosis VVA (no results of cytological vaginal maturation index from vaginal samples were available), its small sample size, and the short follow-up at 12 weeks. For these reasons our data requires further studies involving a larger number of women, with longer clinical follow-up and the comparison with other active compounds. However, all women included in the present study were postmenopausal who reported moderate to severe VVA symptoms, making our population more consistent with women presenting in primary care settings, and similar to the postmenopausal women included in a randomized clinical trial that compared vaginal estradiol with vaginal moisturizers [23]. Other previous studies have studied postmenopausal women with VVA treated with vaginal estrogens but did not compare to a moisturizer [24,25].

Despite the aforementioned limitations, we conclude that the investigated product proved to be effective as a single local agent for the treatment of symptoms associated with VVA, being well accepted by patients for its immediate therapeutic effects and the lack of side effects. Vaginal moisturizers should be used regularly to achieve optimal effects. Greater acceptance by women of vaginal devices like the investigated product would help counteract the chronicity of the condition, VVA.

Acknowledgments

ISDIN and DiaTrecnon (Rafael Sánchez-Borrego) designed the research. DiaTrecnon conducted the research and Trialance analyzed data and

performed statistical analysis. Rafael Sánchez-Borrego, Manuel Sánchez-Prieto, and Félix Lugo-Salcedo data acquisition. Rafael Sánchez-Borrego with the collaboration of the remaining authors, Manuel Sánchez-Prieto, Nicolás Mendoza, Peter Chedraui, Félix Lugo-Salcedo, Sonia Aladrén-Pérez, Aida Serra-Ribas, and Javier Bustos-Santafé, drafted the first version, revised the paper critically and contributed to the final version. All the authors have read and approved the final manuscript.

Ethics approval and consent to participate

All patients provided written informed consent upon enrollment, indicating their voluntary participation in the study. The study protocol was approved by an independent ethics committee of the Grupo Hospitalario Quirónsalud-Catalunya (Sant Cugat del Vallès, Spain), on 8 March 2022 (Resolution 05/2022). The study was conducted in accordance with the ethical principles encapsulated in the Declaration of Helsinki and consistent with good clinical practices applied to MDs (ISO 14155:2020) and the applicable regulatory requirement(s). The study is registered on ISCRT with number 44865.

Authors' contributions

CRediT: **Manuel Sánchez-Prieto**: Data curation, Investigation, Writing – original draft, Writing – review & editing; **Nicolás Mendoza**: Writing – original draft, Writing – review & editing; **Peter Chedraui**: Writing – original draft, Writing – review & editing; **Félix Lugo-Salcedo**: Investigation, Writing – original draft, Writing – review & editing; **Aida Serra-Ribas**: Writing – original draft, Writing – review & editing; **Sonia Aladrén-Pérez**: Writing – original draft, Writing – review & editing; **Javier Bustos-Santafé**: Writing – original draft, Writing – review & editing; **Rafael Sánchez-Borrego**: Conceptualization, Funding acquisition, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing.

Disclosure statement

Rafael Sánchez-Borrego has served (within the last year) or is currently serving as a consultant to or on the advisory boards of: Novo Nordisk, Perrigo Company PLC, Seid Lab, and Shionogi Inc; and has also served (within the last year) or is currently serving on the speaker's bureaus of: Novo Nordisk, Seid Lab, and Shionogi Inc; and in the last year has received or is currently receiving grant/research support from: Exeltis, ISDIN, and Mitra. Manuel Sánchez-Prieto, Nicolás Mendoza, Peter Chedraui, and Félix Lugo reports no conflicts of interest. Javier Bustos, Sonia Aladren, and Aida Serra are ISDIN employees.

Funding

ISDIN provided financial support for the development of the present research.

ORCID

Manuel Sánchez-Prieto http://orcid.org/0000-0001-7366-0446
Nicolás Mendoza http://orcid.org/0000-0002-1653-2509
Peter Chedraui http://orcid.org/0000-0002-1556-3979
Félix Lugo-Salcedo http://orcid.org/0000-0001-9965-9363
Aida Serra-Ribas http://orcid.org/0009-0009-0348-2205
Sonia Aladrén-Pérez http://orcid.org/0000-0001-7343-5222
Javier Bustos-Santafé http://orcid.org/0000-0001-6892-4814
Rafael Sánchez-Borrego http://orcid.org/0000-0001-6583-7440

Data availability statement

The data supporting the findings of this study are available from the corresponding author (Rafael Sánchez-Borrego) upon reasonable request. The data are not publicly available due to restrictions, as they contain information that could compromise the privacy of research participants.

References

[1] Angelou K, Grigoriadis T, Diakosavvas M, et al. The genitourinary syndrome of menopause: an overview of the recent data. Cureus. 2020;12(4):e7586. doi: 10.7759/cureus.7586.
[2] Lambrinoudaki I, Mili N, Augoulea A, et al. The LADY study: epidemiological characteristics of prevalent and new genitourinary syndrome of menopause cases in Greece. Climacteric. 2024;27(3):289–295. doi: 10.1080/13697137.2024.2314504.
[3] Portman DJ, Gass ML. Genitourinary syndrome of menopause: new terminology for vulvovaginal atrophy from the International Society for the Study of Women's Sexual Health and the North American Menopause Society. Menopause. 2014;21(10):1063–1068. doi: 10.1097/GME.0000000000000329.
[4] Palacios S, Cancelo MJ, Castelo Branco C, et al. Vulvar and vaginal atrophy as viewed by the Spanish REVIVE participants: symptoms, management and treatment perceptions. Climacteric. 2017;20(1):55–61. doi: 10.1080/13697137.2016.1262840.
[5] Palacios S. Sequential treatment in vulvovaginal atrophy. Climacteric. 2023;26(4):292–295. doi: 10.1080/13697137.2023.2197588.
[6] Hirschberg AL, Bitzer J, Cano A, et al. Topical estrogens and non-hormonal preparations for postmenopausal vulvovaginal atrophy: an EMAS clinical guide. Maturitas. 2021;148:55–61. doi: 10.1016/j.maturitas.2021.04.005.
[7] Palacios S, Panay N, Sánchez-Borrego R, et al. Earlier treatment of vulvovaginal atrophy in post-menopausal women may improve treatment outcomes. J Gynecol Women's Health. 2019;16(1):555928. doi: 10.19080/JGWH.2019.16.555928.
[8] Sánchez-Borrego R, de Diego Pérez de Zabalza MV, Alfageme Gullón MJ, et al. Satisfaction and medication adherence in women with vulvovaginal atrophy: the CRETA. Climacteric. 2023;26(5):437–444. doi: 10.1080/13697137.2023.2190508.
[9] Sánchez-Prieto M, Pingarrón C, Bergamaschi L, et al. Prospective, multicenter, uncontrolled study on the effectiveness and safety of a hyaluronic acid water-based vaginal lubricant in alleviating vaginal dryness and dyspareunia. Gynecol Endocrinol. 2024;40(1):2317268. doi: 10.1080/09513590.2024.2317268.
[10] Edwards D, Panay N. Treating vulvovaginal atrophy/genitourinary syndrome of menopause: how important is vaginal lubricant and moisturizer composition? Climacteric. 2016;19(2):151–161. doi: 10.3109/13697137.2015.1124259.
[11] Sánchez-Borrego R, Manubens M, Navarro MC, et al. Position of the Spanish Menopause Society regarding vaginal health care in postmenopausal women. Maturitas. 2014;78(2):146–150. doi: 10.1016/j.maturitas.2014.03.003.
[12] Nappi RE, Martini E, Cucinella L, et al. Addressing Vulvovaginal Atrophy (VVA)/Genitourinary Syndrome of Menopause (GSM) for Healthy Aging in Women. Front Endocrinol (Lausanne). 2019;10:561. doi: 10.3389/fendo.2019.00561.
[13] Briggs P, Karavadra B, Wyatt J, et al. Genitourinary syndrome of menopause: evaluation of symptoms, using a questionnaire, in a research setting, before and after treatment. Post Reprod Health. 2024;30(3):147–155. doi: 10.1177/20533691241246366.
[14] Coronado PJ, Borrego RS, Palacios S, et al. Structural validity of a 16-item abridged version of the cervantes health-related quality of life scale for menopause: the cervantes short-form scale. Menopause. 2015;22(3):325–336. doi: 10.1097/GME.0000000000000321.
[15] Palacios S, Ferrer-Barriendos J, Parrilla JJ, et al. Health-related quality of life in the Spanish women through and beyond menopause. Development and validation of the Cervantes Scale. Med Clin (Barc). 2004;122(6):205–211. doi: 10.1016/s0025-7753(04)74198-6.
[16] Cagnacci A, Franco Barattini D, Casolati E, et al. Short and long-term effect of polycarbophil vaginal gel on vaginal atrophy of peri- and post-menopausal women. The TRIPLE study. Eur J Obstet Gynecol Reprod Biol. 2024;299:303–308. doi: 10.1016/j.ejogrb.2024.06.033.
[17] Cagnacci A, Barattini DF, Casolati E, et al. Polycarbophil vaginal moisturizing gel versus hyaluronic acid gel in women affected by vaginal dryness in late menopausal transition: a prospective randomized trial. Eur J Obstet Gynecol Reprod Biol. 2022;270:239–245. doi: 10.1016/j.ejogrb.2022.01.021.

[18] Chen J, Geng L, Song X, et al. Evaluation of the efficacy and safety of hyaluronic acid vaginal gel to ease vaginal dryness: a multicenter, randomized, controlled, open-label, parallel-group, clinical trial. J Sex Med. 2013;10(6):1575–1584. doi: 10.1111/jsm.12125.

[19] Garcia de Arriba S, Grüntkemeier L, Häuser M, et al. Vaginal hormone-free moisturising cream is not inferior to an estriol cream for treating symptoms of vulvovaginal atrophy: prospective, randomised study. PLoS One. 2022;17(5):e0266633. doi: 10.1371/journal.pone.0266633.

[20] Nappi RE, Palacios S. Impact of vulvovaginal atrophy on sexual health and quality of life at postmenopause. Climacteric. 2014;17(1):3–9. doi: 10.3109/13697137.2013.871696.

[21] Khani S, Azizi M, Elyasi F, et al. The prevalence of sexual dysfunction in the different menopausal stages: a systematic review and meta-analysis. Int J Sex Health. 2021;33(3):439–472. doi: 10.1080/19317611.2021.1926039.

[22] Stute P, May TW, Masur C, et al. Efficacy and safety of non-hormonal remedies for vaginal dryness: open, prospective, randomized trial. Climacteric. 2015;18(4):582–589. doi: 10.3109/13697137.2015.1036854.

[23] Mitchell CM, Reed SD, Diem S, et al. Efficacy of vaginal estradiol or vaginal moisturizer vs placebo for treating postmenopausal vulvovaginal symptoms: a randomized clinical trial. JAMA Intern Med. 2018; 178(5):681–690. doi: 10.1001/jamainternmed.2018.0116.

[24] Bachmann G, Bouchard C, Hoppe D, et al. Efficacy and safety of low-dose regimens of conjugated estrogens cream administered vaginally. Menopause. 2009;16(4):719–727. doi: 10.1097/gme.0b013e3181a48c4e.

[25] Bachmann G, Lobo RA, Gut R, et al. Efficacy of low-dose estradiol vaginal tablets in the treatment of atrophic vaginitis: a randomized controlled trial. Obstet Gynecol. 2008;111(1):67–76. doi: 10.1097/01.AOG.0000296714.12226.0f.