



Dermatology Reports

<https://journals.pagepress.net/dr>

eISSN 2036-7406



SIDCO

Società Italiana di Dermatologia
Chirurgica, Oncologica, Correttiva ed Estetica

Publisher's Disclaimer. E-publishing ahead of print is increasingly important for the rapid dissemination of science. **Dermatology Reports** is, therefore, E-publishing PDF files of an early version of manuscripts that undergone a regular peer review and have been accepted for publication, but have not been through the copyediting, typesetting, pagination and proofreading processes, which may lead to differences between this version and the final one.

The final version of the manuscript will then appear on a regular issue of the journal.

E-publishing of this PDF file has been approved by the authors.

Please cite this article as:

Fajriani NH, Djawad K, Tabri F, et al. Comparison of the effectiveness of 30% Aloe vera cream and 20% urea cream as topical treatment for xerosis cutis in chronic kidney disease: a randomized clinical trial. Dermatol Rep 2026 [Epub Ahead of Print] doi: 10.4081/dr.2026.10496



© the Author(s), 2026
Licensee [PAGEPress](https://www.pagepress.net), Italy

Received: 27 June 2025; Accepted: 16 March 2026.

Note: The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.



Comparison of the effectiveness of 30% *Aloe vera* cream and 20% urea cream as topical treatment for xerosis cutis in chronic kidney disease: a randomized clinical trial

Nur Hikmah Fajriani,^{1,2} Khairuddin Djawad,¹ Farida Tabri,¹ Andi Alfian Zainuddin,³ Haerani Rasyid,⁴ Widya Widita¹

¹Department of Dermatology and Venereology, Faculty of Medicine, Hasanuddin University, Makassar; ²Department of Dermatology and Venereology, Faculty of Medicine, Bosowa University, Makassar; ³Department of Public Health, Faculty of Medicine, Hasanuddin University, Makassar; ⁴Department of Internal Medicine, Faculty of Medicine, Hasanuddin University, Makassar, Indonesia

Key words: *Aloe vera*; chronic kidney disease; skin abnormalities; urea.

Correspondence: Nur Hikmah Fajriani, Department of Dermatology and Venereology, Faculty of Medicine, Hasanuddin University, Perintis Kemerdekaan KM10 St., 90245 Makassar, Indonesia. Tel.: +62 822-5610-4943. E-mail: nurhikmahfajriani@gmail.com

Contributions: Nur Hikmah Fajriani, Khairuddin Djawad: conceptualization, design, data collection, writing – original draft; Nur Hikmah Fajriani, Khairuddin Djawad, Farida Tabri, Andi Alfian Zainuddin, Haerani Rasyid, Widya Widita: writing – review & editing, revision; Khairuddin Djawad, Farida Tabri, Andi Alfian Zainuddin, Haerani Rasyid, Widya Widita: validation. All authors read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of interest: the authors declare no potential conflict of interest.

Ethics approval and consent to participate: the Health Research Ethics Committee, Faculty of Medicine, Hasanuddin University, Makassar, approved this research on January 17, 2024 (No. 45/UN4.6.4.5.31/PP36/2024) with protocol number UH23120893. Participants signed a written agreement and received information before enrolling in the study.

Availability of data and materials: the datasets generated and/or analyzed during the study are available from the corresponding author upon reasonable request.

Funding: this study received no specific funding.

Acknowledgments: the authors acknowledge Farhamna Academic for assisting in the preparation of this manuscript. The authors also acknowledge the staff in the Department of Dermatology and Venereology, Faculty of Medicine, Hasanuddin University, who have assisted in data collection and data acquisition.

Abstract

Xerosis is a prevalent skin disorder among patients with chronic kidney disease (CKD) undergoing hemodialysis (HD). While both *Aloe vera* cream 30% and urea cream 20% have been shown to improve skin hydration in cases of xerosis cutis, direct comparisons between the two are limited. This study aims to compare the effectiveness of both creams in treating xerosis cutis in patients with chronic kidney disease on hemodialysis (CKD-HD). A randomized controlled trial was conducted involving 35 eligible CKD-HD patients. Each patient received either urea cream 20% or *A. vera* cream 30%, which was applied to both their left and right arms. Skin moisture was assessed weekly using corneometer readings and overall dry skin (ODS) scores over 4 weeks. The present study reveals that both treatments significantly increased corneometer readings and decreased ODS scores compared to baseline ($p < 0.05$), but no significant difference was found between the two creams ($p > 0.05$). In conclusion, *A. vera* cream 30% and urea cream 20% demonstrate similar effectiveness in improving skin moisture for patients with xerosis cutis associated with CKD-HD.

Introduction

Chronic kidney disease (CKD) is characterized by enduring structural or functional damage to the kidneys lasting for three months or longer, which carries significant health implications.¹ The rising global prevalence of CKD is a significant public health issue due to its association with increased morbidity and mortality, particularly from cardiovascular disease. Additionally, CKD can cause systemic dysfunction that affects multiple organs, including the skin, leading to cutaneous complications that impair quality of life and may necessitate timely diagnosis and intervention.²

CKD is commonly linked to various skin disorders, including xerosis, pruritus, hyperpigmentation, bullous disease, perforated dermatosis, and skin eruptions associated with elevated serum calcium levels.³ Pruritus, a common distressing symptom in CKD patients, arises from uremic toxin accumulation and pro-inflammatory mediators, producing pruritogens. Xerosis affects approximately 85% of end-stage renal disease patients, linked to reduced moisture in the stratum corneum, decreased sebaceous and sweat gland function, alterations in epidermal lipid composition, and elevated urea levels, all contributing to skin manifestations in CKD.³

Uremic pruritus (UP), or CKD-associated pruritus (CKD-aP), is a common and gradually developing symptom in patients with CKD, particularly prevalent in those with end-stage renal disease.³ The prevalence of UP has decreased to an estimated 20% to 50%, attributed to improved dialysis techniques that lower pruritogenic substances in circulation, with incidence rates rising alongside the severity of CKD: 18% in stage 3, 26% in stage 4, and up to 58% in stage 5 after a month of treatment. A study by Khanna *et al.* (2010) reported that 96% of hemodialysis (HD) patients exhibited

dermatological abnormalities, with xerosis (75%), pigmentation disorders (50%), and pruritus (36%) being the most common.⁴ Xerosis prevalence was significantly high at 73.25%, reaching 88.37% in the HD cohort, compared to non-HD patients. Contributing factors to this elevated prevalence include compromised skin barrier function, exposure to irritants, eccrine gland dysfunction, metabolic imbalances, and high-dose diuretics, with additional studies by Falodun *et al.* and Chanda *et al.* reporting xerosis rates of 86% and 61%, respectively.^{5,6}

Dry skin symptoms can be effectively managed by enhancing the stratum corneum's hydration by applying moisturizing formulations containing occlusives, humectants, and emollients, collectively improving skin texture and barrier function. Urea, a notable humectant with antibacterial properties, enhances protective functions when combined with agents like sodium lactate and vegetable oils. Additionally, *Aloe vera*, rich in glucomannans and amino acids, stimulates fibroblast activity to boost collagen production, improve skin elasticity, and reduce wrinkles' appearance while alleviating rough skin texture and minimizing pore size.^{7,8}

A comparison between *A. vera* and urea in routinely reducing skin dryness in patients with chronic kidney disease on hemodialysis (CKD-HD) has not been clearly studied. This study aims to analyze the comparative effectiveness of using *A. vera* and urea in subjects with CKD-HD.

Materials and Methods

Trial design

A randomized control trial (RCT) was conducted from January to April 2024 from eligible CKD-HD participants in the HD installation at Wahidin Sudirohusodo Hospital (Makassar, Indonesia) and its satellite hospital.

Participants

The inclusion criteria for this study were patients aged 40-55 years who had undergone HD for at least the last month, were willing to participate in the research by signing an informed consent form, and had complete examination data. Patients who were uncooperative, had a history of allergy to urea cream and/or olive cream, had a history of atopy, or were experiencing skin disorders such as dermatitis, eczema, psoriasis, ichthyosis, and skin infections were excluded from this study. Participants were declared as dropouts if they developed an allergy to 20% urea cream and/or 30% *A. vera* cream during the study, moved cities, or died.

Preparation of topical urea cream 20% and topical Aloe vera cream 30%

A 20% urea topical cream was prepared initially to create the oil phase by melting cetyl alcohol (2% w/w), stearic acid (13% w/w), and vaseline (3% w/w) in a water bath. Next, prepare the water phase by dissolving triethanolamine (3.5% w/w), propylene glycol (10% w/w), nipagin (0.1% w/w), and distilled water in a separate porcelain cup, also heated in a water bath. Combine the two phases in a hot mortar, mix until homogeneous, then incorporate 20% w/w urea and stir until uniform.

A 30% *A. vera* cream was prepared using a vanishing cream base, comprising an oil phase with 1.5 g cera alba, 3 g vaseline album, 0.5 g nipasol, and 13 g stearic acid, which were melted in a water bath at 70°C. The water phase included 1.5 g triethanolamine, 10g propylene glycol, 0.5g nipagin, and distilled water, heated to 70°C. Both phases were combined in a hot mortar and mixed until a homogeneous cream was achieved, which was then stored in a cool, well-sealed container.

Interventions

In the controlled study, the researchers systematically divided the participants into two groups in order to evaluate the efficacy of urea and *A. vera* creams in treating xerosis cutis. During the initial visit, eligible patients completed a detailed data form, and their degree of dry skin was assessed using the overall dry skin (ODS) score alongside epidermal moisture measurements obtained from the Corneometer® CM 825.

Participants were instructed to apply two different creams: urea cream at a concentration of 20% and *A. vera* cream at 30%. Each cream was applied to the posterior aspect of the lower right and left arms. The application technique was clearly explained to the patients, emphasizing that each 2.5 mL dose (equivalent to one measuring spoon) should be administered twice daily (morning and evening) over a treatment course of 4 consecutive weeks. Subsequent follow-up visits involved weekly assessments (week 1, 2, 3, and 4) utilizing the Corneometer® CM 825 for moisture evaluation, alongside repeated measures of the ODS conducted at a designated site using mica paper. This methodology aims to yield robust data on the comparative effectiveness of the two cream formulations in mitigating dry skin symptoms.

Sample size

The minimum sample size was determined using the formula for paired analytical research involving a numeric measurement scale. With an alpha value of 5% and a beta value of 10%, the minimum sample size required is 11 participants per group. As dropout was estimated at 30%, the sample size was increased to 15 patients per group.

Statistical analysis

The study results were presented descriptively, utilizing numbers and percentages for categorical variables and mean with standard deviation (SD) or median with interquartile range for numeric data based on distribution. Statistical analyses were performed with SPSS 26, employing the Kolmogorov-Smirnov test for normality, independent sample *t*-test or Mann-Whitney test for group comparisons, and paired sample *t*-test or Wilcoxon test for within-group comparisons. Repeated analysis of variance (ANOVA) or Friedman tests were used for multiple time-point comparisons, with significance set at $p < 0.05$ and a 95% confidence interval.

Results

This study focused on 38 subjects diagnosed with xerosis cutis as part of the CKD-HD category. Three subjects withdrew from the study for unspecified reasons, resulting in a final cohort of 35 participants who completed the study. Each subject received topical interventions, precisely 20% urea cream and 20% *A. vera* cream, applied to the anterior lower leg. Subjects were randomly assigned to two treatment groups: 18 participants received 30% *A. vera* cream on the right anterior lower leg alongside 20% urea cream on the left anterior lower leg. In comparison, 17 participants received 20% urea cream on the right anterior lower leg and 30% *A. vera* cream on the left anterior lower leg. This randomized design aims to evaluate the comparative efficacy of the topical treatments in managing xerosis cutis symptoms.

Baseline characteristics

Table 1 shows the baseline characteristics of the study participants. Based on patient gender, 16 (45.7%) were male, while 19 (54.3%) were female, aged 38-52 years, and a mean $\pm$ SD age of 47.4 ± 5.3 years. The range of HD patient periods was between 1 month and 10 years, with a frequency of HD 2-3 times a week. Subjects with a frequency of HD 2 times a week were 15 (42.9%) and with HD 3 times a week were 20 (57.1%). Comorbidities in subjects with CKD-HD were hypertension (28, 80.00%) and diabetes mellitus (6, 17.10%). Initial data showed that 33 (94.3%) subjects had never used lotion or moisturizer before.

Level of xerosis cutis in CKD-HD based on corneometer measurements

A comparison of corneometer scores between the administration of 30% *A. vera* cream and 20% urea cream is presented in Table 2. Comparison of corneometer results between the front lower legs given 30% *A. vera* cream and 20% urea cream in weeks 0, 1, 2, 3, and 4 of intervention obtained results that were not significantly different ($p > 0.05$). These results indicate that the corneometer scores of both groups have the same baseline. Both groups also had the same level of skin dryness after 4 weeks

of intervention. The Friedman test showed a difference in the average corneometer results in weeks 0, 1, 2, 3, and 4 of intervention on the front lower legs given 30% *A. vera* and 20% urea cream ($p<0.001$).

A comparison of corneometer scores for the front lower legs treated with 30% *A. vera* cream vs. 20% urea cream is shown in Table 3 and Figure 1. A comparison of corneometer scores for front lower legs treated with 30% *A. vera* cream vs. 20% urea cream indicated that patients using *A. vera* experienced improvements over the intervention weeks, but these were not statistically significant compared to the urea group ($p>0.05$). While the *A. vera* group showed greater changes from the initial measurement, the urea group exhibited more pronounced improvements between weeks 1 and 4, as well as between weeks 2, 3, and 4. However, the differences between the two groups remained statistically insignificant ($p>0.05$).

Level of xerosis cutis in CKD-HD based on overall dry skin assessment

A comparison of ODS values between the administration of 30% *A. vera* cream and 20% urea cream is presented in Table 4. A comparison of ODS results for the front lower legs treated with 30% *A. vera* cream and 20% urea cream showed no significant differences at weeks 0 to 4 ($p>0.05$), indicating similar baseline skin dryness levels in both groups. However, the Friedman test revealed a significant difference in average ODS values over time ($p<0.001$) for both treatments.

A comparison of ODS values over time for the front lower legs of patients using 30% *A. vera* cream vs. 20% urea cream is shown in Table 5 and Figure 2. Patients treated with 30% *A. vera* cream showed greater ODS values after 4 weeks, but changes were statistically insignificant compared to the 20% urea cream group ($p>0.05$). While the urea cream group experienced significant changes in ODS scores between the initial and subsequent weeks, these differences were also not statistically significant compared to the *A. vera* group ($p>0.05$).

Factors associated with patient clinical improvement after intervention

Table 6 compares changes in corneometer results in patients using urea cream 20% and *A. vera* cream 30% before and after intervention based on HD duration. A comparison of corneometer results after 4 weeks of treatment with 20% urea cream and 30% *A. vera* cream showed no significant difference in skin dryness improvement between recent and long-term HD patients ($p>0.05$).

Table 7 compares changes in corneometer results in patients using urea cream 20% and *A. vera* cream 30% before and after intervention based on diabetes mellitus status. Corneometer results after 4 weeks of treatment with 20% urea cream and 20% olive cream showed no significant differences in clinical

improvement of skin dryness between patients with and without diabetes mellitus comorbidities ($p>0.05$).

Discussion

This study investigated a cohort of 38 subjects diagnosed with CKD-HD who also exhibited xerosis cutis, with participants aged between 38 and 52 years. Xerosis cutis is more common in the elderly due to age-related factors such as epidermal thinning, reduced microcirculation, impaired fluid and nutrient availability, compromised wound healing and immune response, diminished sebaceous and sweat gland function, and decreased lipid synthesis and natural moisturizing factor (NMF) in the stratum corneum.⁹ A reduction in lipid content may impair the skin's barrier function, exacerbating overall skin dryness.¹⁰ Xerosis occurs in about 85% of patients with end-stage CKD prior to renal replacement therapy, driven by decreased stratum corneum water retention, impaired gland function due to adnexal atrophy, altered epidermal lipid composition, and elevated serum urea levels.³

Comorbidities such as diabetes mellitus, prevalent in patients with CKD, significantly exacerbate xerosis cutis, even in those not on HD, with a prevalence of up to 40%. In diabetic patients, xerosis results from impaired skin barrier function due to reduced epidermal proliferation and differentiation, leading to decreased hydration and sebaceous gland activity, compounded by microangiopathy.¹¹ This study shows that the skin moisture levels of patients with CKD-HD, both with or without diabetes mellitus, do not differ significantly. Xerosis cutis in patients with CKD-HD is caused by uremic toxins. Hydration levels may be affected by diuretics and the HD process, which can lead to impaired skin barrier function and dehydration. Despite the assumption that prolonged HD negatively impacts skin moisture, studies, including research by Yahya *et al.* (2017), indicate no significant correlation between the duration of treatment and skin moisture levels.¹²

Using 20% urea cream for managing xerosis cutis in patients with CKD-HD demonstrated significant improvements in skin dryness, as measured by a corneometer over a 4-week treatment period. The study by Yahya *et al.*, involving 65 CKD-HD patients treated with 20% urea cream, demonstrated a significant increase in skin hydration, with corneometer readings rising from 17.986 ± 6.9960 to 24.966 ± 6.0084 after treatment. Additionally, all patients improved their ODS scores from 2 at baseline to 0 by week 4, achieving statistical significance ($p<0.001$) and highlighting the cream's effectiveness in managing xerosis cutis.¹²

Urea, a hygroscopic molecule integral to the NMF in the epidermis, is effective in treating xerosis at concentrations of 10% to 30%, serving as a hydrating and keratolytic agent. Notably, 20% urea cream has significantly improved skin hydration and barrier function in patients with CKD-HD, as evidenced by corneometer measurements and reductions in transepidermal water loss.¹³ Urea's

mechanism of action includes its ability to attract and retain water in the skin, facilitating moisture absorption from the dermis through the epidermis and ultimately reaching the stratum corneum.¹⁴ Urea enhances the skin barrier by influencing keratinocyte gene expression for differentiation and antimicrobial peptide production while also regulating keratinocyte proliferation and exhibiting keratolytic activity through protein denaturation.⁸

In this study, the application of *A. vera* to treat xerosis cutis in patients with CKD-HD yielded significant changes in skin hydration, as assessed through corneometer measurements over 4 weeks. Further evaluation utilizing the ODS demonstrated noteworthy advancements in skin condition over the study period. This aligns with the findings by Handriani *et al.* (2020), where a cohort of 45 CKD-HD patients receiving a 75% *A. vera* concentration exhibited substantial improvements in xerosis severity compared to a placebo group.¹⁵

Furthermore, an analysis was conducted to compare the effectiveness of using urea cream 20% and *A. vera* cream 30% in improving skin moisture in patients with CKD-HD with xerosis cutis, and the results obtained were not statistically significant. Based on the results of measuring the level of moisture measured by a corneometer using urea cream 20% and *A. vera* cream 30%, both showed improvements in skin moisture levels in patients with CKD-HD with xerosis cutis.

The limitations of this study include the necessity to control for subjects with non-renal failure-associated HD xerosis. Furthermore, achieving a balanced distribution of participants with diabetes mellitus comorbidities relative to those without diabetes is crucial. This balance is anticipated to clarify the impact of comorbidities on skin moisture levels in individuals with renal failure-related HD xerosis cutis.

Conclusions

Applying a 30% topical *A. vera* cream combined with a 20% urea cream has significantly enhanced skin moisture levels in patients with xerosis cutis related to CKD-HD. Future studies should focus on participant selection based on the specific duration of HD and extend the observation period to assess better the long-term effects of these treatments on skin hydration.

References

1. Agarwal A, Nath KA. Pathophysiology of Chronic Kidney Disease Progression: Organ and Cellular Considerations. In *Chronic Renal Disease*. Elsevier; 2019, p. 263-78.
2. Amin R, Lechner A, Vogt A, et al. Molecular characterization of xerosis cutis: A systematic review. *PLoS One* 2021;16:e0261253.
3. Augustin M, Wilsmann-Theis D, Körber A, et al. Diagnosis and treatment of xerosis cutis – a position paper. *Dtsch Dermatol Ges* 2019;17:3-33.
4. Khanna D, Singal A, Kalra OP. Comparison of cutaneous manifestations in chronic kidney disease with or without dialysis. *Postgrad Med J* 2010;86:641-7.
5. Chanda GM, Chintagunta SR, Arakkal G. Dermatological manifestations in chronic renal failure patients with and without hemodialysis: A study at a tertiary care centre. *J Dr YSR Univ Health Sci* 2017;6:8.
6. Falodun O, Ogunbiyi A, Salako B, George AK. Skin changes in patients with chronic renal failure. *Saudi J Kidney Dis Transpl* 2011;22:268-72.
7. Matei CE, Visan AI, Cristescu R. Aloe Vera Polysaccharides as Therapeutic Agents: Benefits Versus Side Effects in Biomedical Applications. *Polysaccharides* 2025;6:36.
8. Piquero-Casals J, Morgado-Carrasco D, Granger C, et al. Urea in Dermatology: A Review of its Emollient, Moisturizing, Keratolytic, Skin Barrier Enhancing and Antimicrobial Properties. *Dermatol Ther* 2021;11:1905-15.
9. Bianti M. Kulit Kering pada Usia Lanjut [Dry Skin in the Elderly]. *Cermin Dunia Kedokteran* 2016;43:400114.
10. Lacy F, Ziemer C. Xerosis Cutis in the Aging Population: an Approach to Diagnosis and Treatment. *Curr Geriatr Rep* 2020;9:206-9.
11. Polena H, Chavagnac-Bonneville M, Sayag M. Improvement of Quality of Life in Dialysis and Diabetic Patients by Skin Dryness and Pruritus Management with an Ecobiological Dermo-Cosmetic Product. *Clin Cosmet Investig Dermatol* 2022;15:2143-52.
12. Yahya YF, Roiana N, Andarina R, et al. Efficacy of 20% urea cream on uremic pruritus with uremic xerosis in chronic renal failure patients undergoing hemodialysis. *Berkala Ilmu Kesehat Kulit Kelamin* 2018;30:1-9.
13. Castello M, Milani M. Efficacy of topical hydrating and emollient lotion containing 10% urea ISDIN® plus dexpanthenol (Ureadin Rx 10) in the treatment of skin xerosis and pruritus in hemodialyzed patients: An open prospective pilot trial. *G Ital Dermatol Venereol* 2011;146:321-5.

14. Baalham P, Birch I, Young M, Beale C. Xerosis of the feet: a Title comparative two-deck study on the effectiveness of two moisturizers. *Br J Community Nurs* 2011;16:591-7.
15. Handriani R, Agustina W. Aloe Vera Extract 75% Effective in Providing Xerosis Repair In Chronic Kidney Failure Patients. *J Ners Midwifery* 2020;7:415-20.

Table 1. Initial characteristics of the study sample.

Characteristics	n	%
Gender		
Man	16	45.70
Woman	19	54.30
Comorbid		
Diabetes mellitus	6	17.10
Hypertension	28	80.00
Hypertension and cardiovascular disease	1	2.90
Length of hemodialysis		
≤3 months	7	20.00
>3 months	28	80.00
	Min-Max	Mean ± SD
Age (years)	38-52	47.40±5.30
Duration of hemodialysis (months)	1-120	25.33±6.44

SD, standard deviation.

Table 2. Corneometer results based on a comparison of time and intervention.

Measurement time	<i>A. vera</i> cream 30% (n=18)	Urea cream 20% (n=17)	p-value
	Mean ± SD	Mean ± SD	
Week 0	22.25±7.98	24.55±5.56	0.776
Week 1	43.6±54.9	35.2±5.5	0.353
Week 2	42.4±6.6	41.9±7.3	0.600
Week 3	49.3±7.8	50.4±8.5	0.735
Week 4	59.8±8.7	58.8±7.7	0.621
p-value*	0.000	0.000	

*Independent sample *t*-test; SD, standard deviation.

Table 3. Comparative analysis of changes in corneometer results between the use of 20% urea cream and 30% *A. vera* cream.

Time comparison	Urea cream 20%	<i>A. vera</i> cream 30%	p-value*
	Δ Mean $\pm$ SD	Δ Mean $\pm$ SD	
Week 0-1	10.68 $\pm$ 6.32	21.35 $\pm$ 53.75	0.220
Week 0-2	17.41 $\pm$ 8.73	20.18 $\pm$ 8.67	0.198
Week 0-3	25.90 $\pm$ 10.25	27.06 $\pm$ 10.63	0.609
Week 0-4	34.27 $\pm$ 9.45	37.55 $\pm$ 11.32	0.315
Week 1-2	6.73 $\pm$ 4.97	-1.17 $\pm$ 53.84	0.414
Week 1-3	15.22 $\pm$ 6.84	5.71 $\pm$ 54.48	0.651
Week 1-4	23.58 $\pm$ 7.27	16.19 $\pm$ 55.85	0.601
Week 2-3	8.49 $\pm$ 5.36	17.36 $\pm$ 8.56	0.252
Week 2-4	16.85 $\pm$ 8.61	17.36 $\pm$ 8.56	0.769
Week 3-4	8.37 $\pm$ 7.66	10.48 $\pm$ 8.34	0.296

*Mann-Whitney U test.

Table 4. Overall dry skin results are based on a comparison of time and intervention.

Measurement time	<i>A. vera</i> cream 30% (n=18)	Urea cream 20% (n=17)	p-value**
	Mean (Min-Max)	Mean (Min-Max)	
Week 0	1.65 (1.00-3.00)	1.66 (1.00-3.00)	1.000
Week 1	0.71 (0.00-2.00)	0.71 (1.00-2.00)	1.000
Week 2	0.03 (0.00-1.00)	0.03 (0.00-1.00)	1.000
Week 3	0.00 (0.00-0.00)	0.00 (0.00-0.00)	1.000
Week 4	0.00 (0.00-0.00)	0.00 (0.00-0.00)	1.000
p-value*	<0.001	<0.001	

*Friedman test; **Mann-Whitney U test.

Table 5. Comparative analysis of changes in ODS score results between the use of 20% urea cream and 30% *A. vera* cream.

Time Comparison	Urea cream 20%	<i>A. vera</i> cream 30%	p-value*
	Δ Mean $\pm$ SD	Δ Mean $\pm$ SD	
Week 0-1	-0.94 $\pm$ 0.33	-0.94 $\pm$ 0.33	1.00
Week 0-2	-1.63 $\pm$ 0.49	-1.63 $\pm$ 0.49	1.00
Week 0-3	-1.66 $\pm$ 0.54	-1.66 $\pm$ 0.54	1.00
Week 0-4	-1.66 $\pm$ 0.54	-1.66 $\pm$ 0.54	1.00
Week 1-2	-0.69 $\pm$ 0.47	-0.69 $\pm$ 0.47	1.00
Week 1-3	-0.71 $\pm$ 0.52	-0.71 $\pm$ 0.52	1.00
Week 1-4	-0.71 $\pm$ 0.52	-0.71 $\pm$ 0.52	1.00
Week 2-3	-0.03 $\pm$ 0.17	-0.03 $\pm$ 0.17	1.00
Week 2-4	-0.03 $\pm$ 0.17	-0.03 $\pm$ 0.17	1.00
Week 3-4	0.00 $\pm$ 0.00	10.48 $\pm$ 8.34	1.00

*Mann-Whitney U Test; SD, standard deviation.

Table 6. Analysis of the association between the length of hemodialysis and participants' corneometer score changes after intervention.

Factor analysis	<i>A. vera</i> cream 30% (n=18)	Urea cream 20% (n=17)
	Δ Mean $\pm$ SD	Δ Mean $\pm$ SD
Length of hemodialysis		
≤ 3 months	38.31 $\pm$ 12.46	33.61 $\pm$ 9.51
> 3 months	37.36 $\pm$ 11.26	34.43 $\pm$ 9.60
p-value*	0.888	0.793

*Independent sample *t*-test; SD, standard deviation.

Table 7. Analysis of the association between diabetes mellitus status and participants' corneometer scores before and after intervention.

Factor analysis	<i>A. vera</i> cream 30% (n=18)		Urea cream 20% (n=17)	
	Week 0	Week 4	Week 0	Week 4
Comorbid of diabetes mellitus				
Present	23.80±6.47	52.92±9.92	24.60±6.45	52.52±11.68
Absent	21.93±8.32	61.22±7.89	24.54±5.49	60.12±6.21
p-value*	0.856	0.746	0.935	0.095

*Independent sample *t*-test.

Figure 1. Comparison of the effectiveness of urea and *A. vera* based on the corneometer throughout the follow-up period.

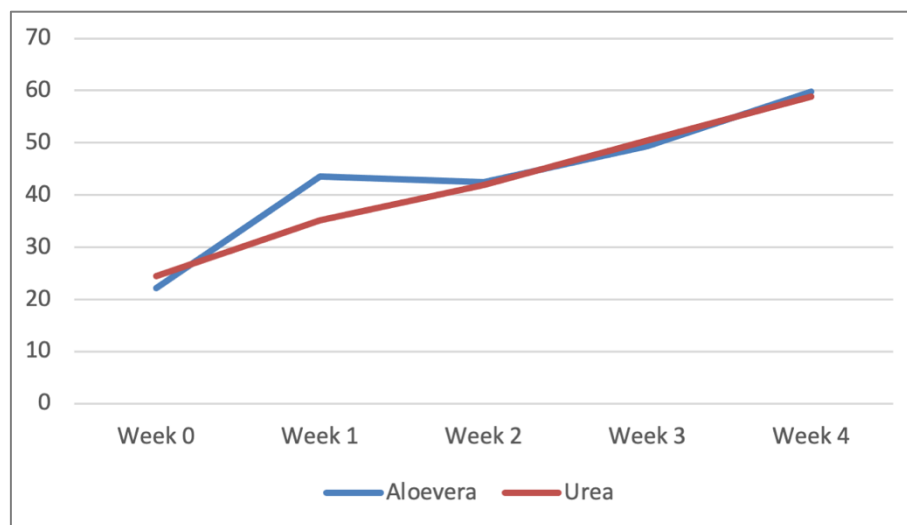


Figure 2. Comparison of the effectiveness of urea and *A. vera* based on ODS scores throughout the follow-up period.

