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FILE: ▪ Herbal Creams
▪ Skin Hydration
▪ Skin Viscsoelasticity

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RE: Herbal Creams Improve Hydration and Viscoelasticity of Skin

Ahshawat M, Saraf S, Saraf S. Preparation and characterization of herbal creams for improvement of skin viscoelastic properties. *Int J Cosmet Sci*. 2008;30:183-193.

Aging of the skin is a continual deterioration process caused by damage of cellular DNA and proteins. According to these authors, skin aging can be of two types: sequential and photo-aging. Sequential aging is a predictable process characterized by physiological alterations in skin function. Keratinocytes are unable to form a functional stratum corneum, and the formation of neutral lipids slows down, resulting in dry, pale skin with fine wrinkles. Photo-aging, caused by overexposure to sunlight's ultraviolet rays, is characterized by dry, pale, and shallow skin, with fine wrinkles and deep furrows. These authors, from Ravishankar Shukla University in India, conducted a study to formulate and evaluate herbal cosmetic creams and how they improve the skin's viscoelastic and hydration properties.

The herbs selected for their study have been used medicinally in crude aqueous and ethanolic extracts in traditional Indian and Chinese medicine systems to treat various skin ailments such as wounds, psoriasis, and inflamed joints.[1] For their study, the authors obtained the herbs (listed below), almond oil, sesame oil, and honey from a local authentic herbal distributor in Raipur, Chhattisgarh. Aloe vera fresh leaves were collected from the medicinal garden of the Institute of Pharmacy in Chhattisgarh State, India. All materials were identified and tested for percent purity (99.7%) by microscopic methods.

The base cream formula (C7), which was used as the control product, included cetyl alcohol, stearic acid, glycerin, propylene glycol, sesame oil, almond oil, honey, jojoba oil, tea tree oil, polysorbitone monostereate, polysorbate monoleate, and deionized water. This formula contained no extracts. The other products (CAA1 through CAA6) were made with different concentrations of extracts (from 0.125-0.9% w/w) of the following 10 herbs, incorporated into the C7 formulation: licorice (*Glycyrrhiza glabra*), turmeric (*Curcuma longa*), psoralea (*Cullen corylifolium* syn. *Psoralea corylifolia*), sickle-pod senna (*Senna tora* syn. *Cassia tora*), betelnut palm (*Areca catechu*), pomegranate (*Punica granatum*), amla (*Phyllanthus emblica* syn. *Emblica officinalis*), gotu kola (*Centella asiatica*), cinnamon (*Cinnamomum verum* syn. *C. zeylanicum*), and aloe (*Aloe vera*).

For their investigation, the authors used a pH meter (E1-111E, Remi, India); Brookfield viscometer (DV-11 using LV-1 spindle; Brookfield Engineering Laboratories Inc., Middleboro, MA) to measure viscosity; colony

counter (M-37, Rolex, India) to determine the microbial contamination of the formulas; and H-21-Multitester (CASIO, India) to measure the spreadability and layer thickness. In addition, they designed 2 instruments to measure the skin's extensibility and firmness. Statistical analysis was done by using SPSS software (SPSS, Inc., Chicago, IL), and results were expressed as mean ± standard deviation.

The study included 18 (6 men and 12 women) subjects. They were aged from 22 to 50 years and had severe dryness of the skin. All subjects consented to meet at the laboratory to participate in the study and apply the coded formulations twice a day.

The subjects were divided into 3 groups of 6. Group 1 was tested using C7 exclusively to observe its initial compliance and safety to the skin. Group 2 was tested with the C7 control and CAA4, and Group 3 was tested with C7 and CAA5. Two application sites (each having a 2 cm^2 sample area) on the back of the volar forearm were used for subjects in groups 2 and 3. CAA4 (extract concentration, 5.05% w/w) and CAA5 (5.91% w/w) were used as test formulations because of their thermal stability, viscosity, and spreadability.

Changes in skin smoothness were noted by each subject. All subjects were assessed for irritation, smoothness, and soft touch of the skin surface before and after applying the CAA4 and CAA5 formulations and the control C7 cream.

After 1 week of treatment, the authors report a highly significant moisturizing effect of CAA4 ($P<0.001$) compared with the C7 formulation. The comparative study of CAA4 and CAA5 showed no significant differences. Regarding the hydration effect, extensibility, and firmness, no significant differences between CAA4 and CAA5 were observed ($P>0.01$). After 6 weeks of treatment, the results showed that subjects using CAA4 and CAA5 had increased skin hydrations levels (15.97 ± 0.55% and 18.27 ± 0.99%, respectively), which were more than those reported with the control C7 formulation (4.70 ± 2.77%). Skin firmness increased up to 28.86 ± 0.86% and 29.89 ± 2.8%, respectively, for the CAA4 and CAA5 groups; and 4.48 ± 0.38% for the C7 group. Improvement in skin extensibility was found to be 32.27 ±1.8% for those in the CAA4 group; 29.89 ± 1.64% for the CAA5 group; and 6.76 ± 0.41% for the control C7 group.

The authors observed a significant improvement in skin moisturizing, firmness, and extensibility in the subjects following the use of several herbal formulations. They attribute these effects to the synergistic antioxidant, anti-inflammatory, and ultraviolet radiation protective properties of the herbal ingredients.

—*Shari Henson*

Reference

[1]Aburjai T, Natsheth FM. Plants used in cosmetics. *Phytother Res*. 2003;17:987-1000.

The American Botanical Council has chosen not to reprint the original article.