

ABS Viola Tricolor Extract PF



wild pansy
Hyaluronic Acid Synthesis
 improvement in barrier function
 increase **Aquaporins-3,**
Hydration,
 and Anti-wrinkle

BACKGROUND

Wild pansy, better known as *Viola tricolor* is a perennial herb with characteristic tricolored flowers that was considered beneficial in diseases of the heart, hence its other name, Heartsease. It was employed as an herbal remedy for its anti-inflammatory, antipyretic, mucilaginous, demulcent and expectorant properties. *Viola tricolor* contains an active chemical principle-violine, in addition to, flavonoids (rutin), mucilage, salicylic acid, tannin and tocopherol. Another important constituent are polysaccharides, which when utilized on the skin, can boost the capacity to retain water. Typically, personal care products designated for increasing moisture function act as film formers or improve barrier function.

SCIENCE

The polysaccharides from *Viola tricolor* have been shown to improve epidermal moisturization by increasing aquaporins-3 activity within the dermis. Aquaporins-3 are synthesized by human keratinocytes as a means to enhance moisture of the skin by increasing osmosis between the dermis and the stratum corneum. Aquaporins-3 function as the mechanism that allows water to move against the concentration gradient to where water is deficient. Improving osmotic function is a novel approach for improving skin moisture. Research studies have indicated that aquaporins-3 are involved in skin hydration, elasticity, barrier function and wound healing.

Code Number: 10346PF

INCI Name: Hydrolyzed Viola Tricolor Extract

INCI Status: Conforms

REACH Status: Conforms

CAS Number: 9015-54-7

EINCS Number: 310-296-6

Origin: Botanical

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

Additives:

Preservatives: None

Antioxidants: None

Other additives: None

Solvents Used: Water

Appearance: Clear to Slightly Hazy Liquid

Soluble/ Miscible: Water

Ecological Information:

100% Biodegradability

Microbial Count:

< 100pg, No Pathogens

Suggested Use Levels: 2.0 – 4.0%

Suggested Applications: Hydration, Hyaluronic Acid Synthesis, Anti-wrinkle

Benefits of ABS Viola Tricolor Extract PF:

- Moisturizing
- Anti-wrinkle
- Hydration
- Aquaporin-3 Synthesis

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BENEFITS

ABS Viola Tricolor Extract PF may also be used to increase the concentration of hyaluronic acid within the epidermis to enhance the skins' water binding properties; as well as increase the synthesis of the CD44 membrane receptor which binds hyaluronic acid in the skin. Optimal epidermal hydration can increase cellular metabolism so cells function more efficiently. By increasing cellular efficiency, certain cellular activities such as protein production increases also. Proteins such as collagen are vital to epidermal integrity. Increasing intracellular production may, not only improve the skin, but also decrease the appearance of fine lines and wrinkles. **ABS Viola Tricolor Extract PF** may be utilized in a variety of skin and hair care formulations to increase epidermal hydration and improve cellular function

EFFICACY DATA

CD44 is the cellular receptor with specificity for Hyaluronic Acid. The effects of **ABS Viola Tricolor Extract PF** on the increase in the CD44 receptor were determined using the flow cytometry method on human keratinocytes. A 2% concentration of **ABS Viola Tricolor Extract PF** was observed to increase the proliferation of CD44 receptors by 43% compared to the negative control and by 7% more than the positive control. The use of **ABS Viola Tricolor Extract PF** as a means to increase the prevalence of the CD44 receptor appears to be dose dependent.

Increase in CD44 Receptor

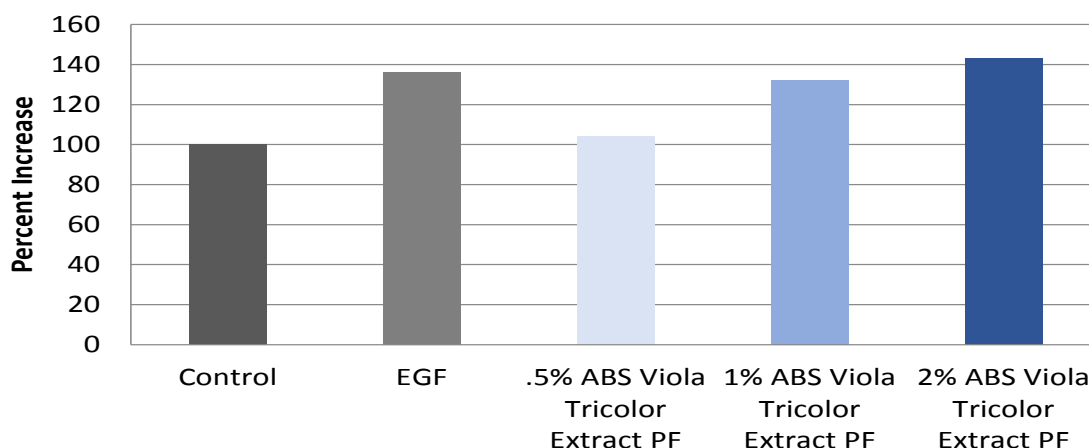


Figure 1. Results of the increase in CD44 following treatment with test materials.

The hydration activity of **ABS Viola Tricolor Extract PF** was determined using a 4% emulsion. Measurements of epidermal hydration were taken with a Corneometer after a single application to the calf regions on the subject's legs. The results indicate that **ABS Viola Tricolor Extract PF** may be used to increase the level of epidermal hydration when compared to the placebo over the course of 24 hours. Compared to the placebo, **ABS Viola Tricolor Extract PF** may increase epidermal by more than 10%.

In addition, we evaluated the long term hydration of this product over a period of 28 days. The results indicate that **ABS Viola Tricolor Extract PF** may be used to effectively hydrate the epidermis for an extended length of time. Compared to the placebo, **ABS Viola Tricolor Extract PF** is capable of hydrating the skin by more than 10% after a period of 14 days, and almost 20% over the period of 28 days.

ABS Viola Tricolor Extract PF

Increase in Hydration

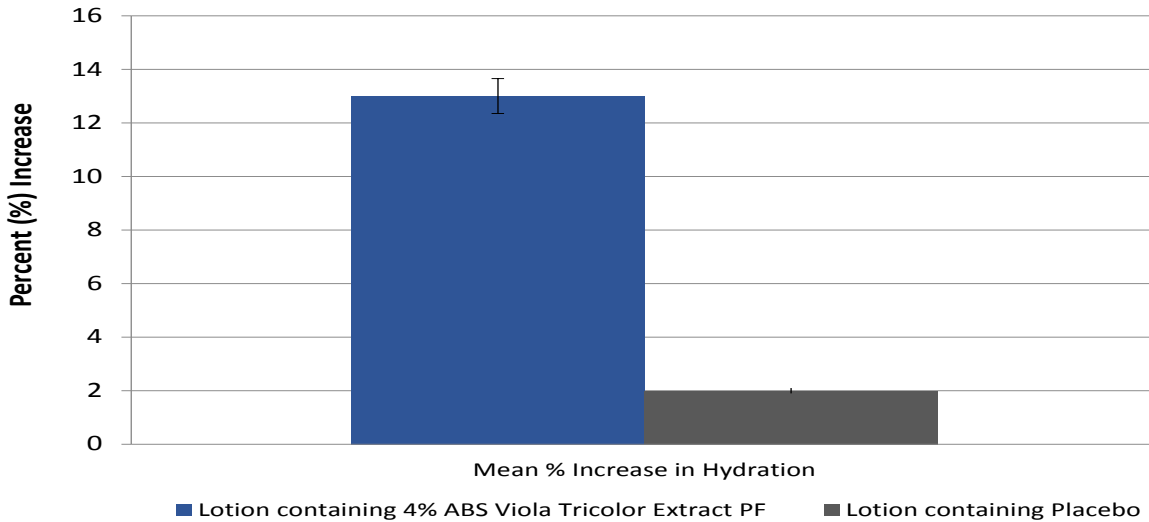


Figure 2. Hydration Results Comparing 4% ABS Viola Tricolor Extract PF and Placebo.

Increase in Long Term Hydration

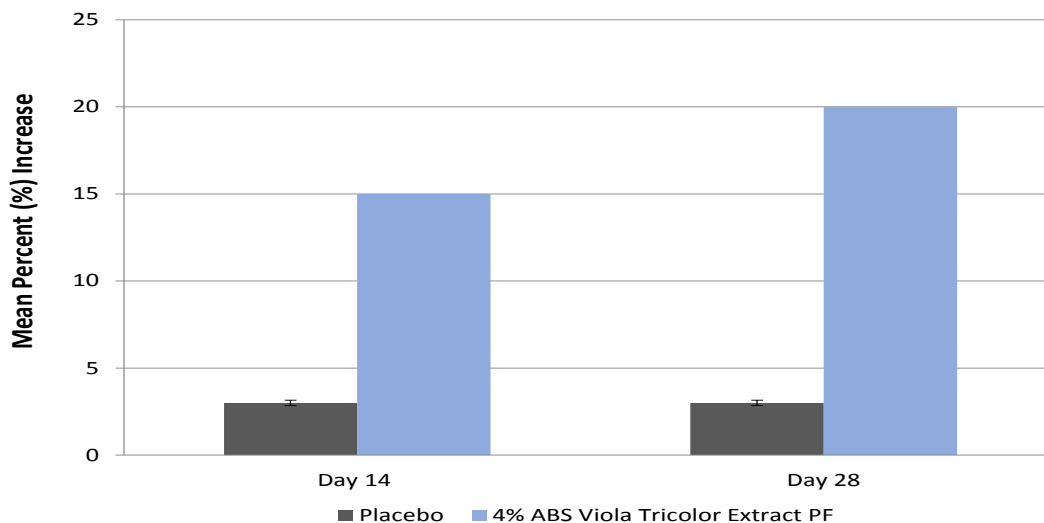


Figure 3. Long Term Hydration Results Comparing 4% ABS Viola Tricolor Extract PF and Placebo.

Hyaluronic acid is capable of improving epidermal elasticity by maintaining the water content of the intercellular matrix of epidermal tissue. Although most believe that the presence of hyaluronic acid is limited to the body's joints, it is actually found throughout the body with a surprisingly high concentration in subcutaneous tissue. It is suspected that the viscous hyaluronic acid acts as a natural guard against subcutaneous desiccation. An ELISA assay was used to measure the synthesis of Hyaluronic Acid by cultures of human keratinocytes. The assay is based on the specificity of hyaluronic acid to a hyaluronic acid-binding protein.

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Hyaluronic Acid Production

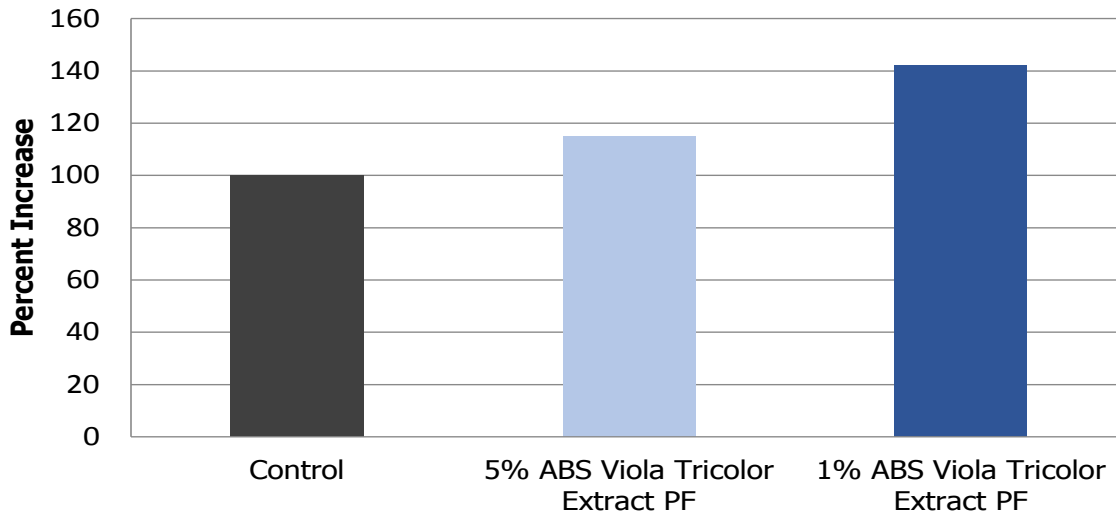


Figure 4. Hyaluronic Acid Production comparing ABS Viola Tricolor Extract PF and Control.

The results indicated that **ABS Viola Tricolor Extract PF** is capable of increasing the percent concentration of hyaluronic acid by approximately 42%. Therefore **ABS Viola Tricolor Extract PF** may be useful for retaining epidermal moisture.

The anti-wrinkle effects of **ABS Viola Tricolor Extract PF** were examined using a panel of 25 female subjects. Silicone mold replicas of test subjects' outer eye area were used to determine a decrease in total wrinkle surface, total wrinkle length and total number of wrinkles. The results indicate that using 4% **ABS Viola Tricolor Extract PF** twice daily for 28 days is effective for decreases the number of wrinkles presents in the outer eye area while also minimizing the total wrinkle surface and wrinkle length.

Mean Changes in Wrinkle Characteristics

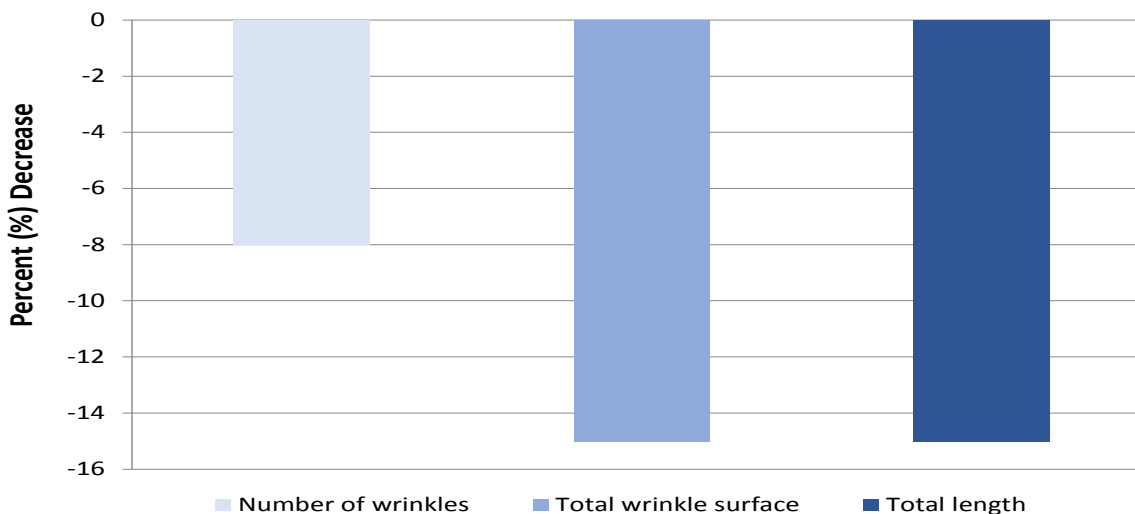


Figure 5. Mean changes in wrinkle characteristics using 4% ABS Viola Tricolor Extract PF.

ABS Viola Tricolor Extract PF

As previously mentioned, Aquaporins-3 is synthesized by human keratinocytes as a means to enhance moisture of the skin by increasing osmosis between the dermis and the stratum corneum. **ABS Viola Tricolor Extract PF** is capable of improving the production of Aquaporins-3, thus effective at increasing epidermal hydration.

Aquaporins-3 Synthesis

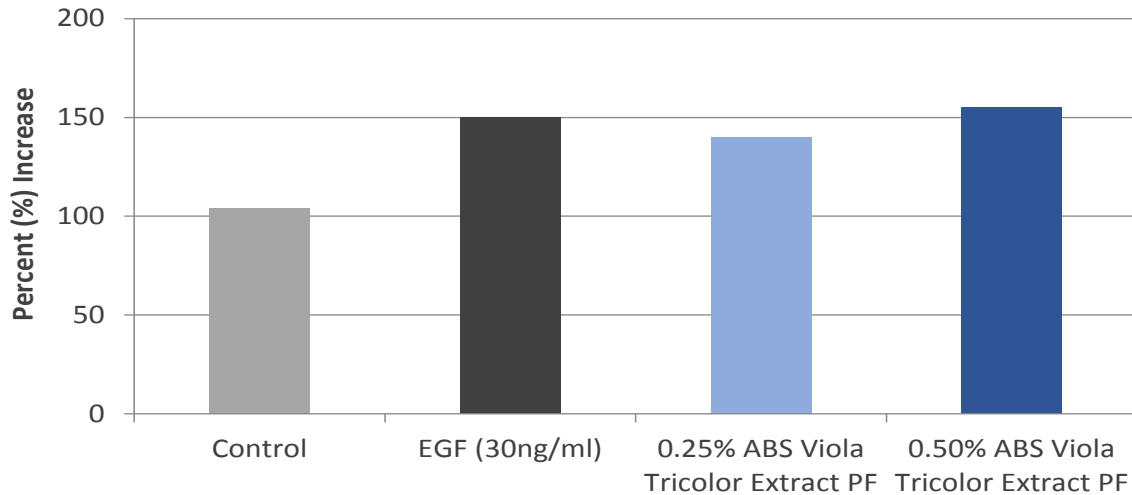


Figure 6. Results of the increase in Aquaporin-3 synthesis following application of test materials

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