ABS Viola Tricolor Extract
Hydration + Hyaluronic Acid Synthesis + Anti-Wrinkle

Tomorrow’s Vision... Today!®
ABS Viola Tricolor Extract

Technical Information:

**Product Code:** 10346

**INCI Name:** Hydrolyzed Viola Tricolor Extract

**INCI Status:** Approved

**Suggested Use Level:** 2.0 – 4.0%

**Suggested Applications:** Hydration, Hyaluronic Acid Synthesis, Anti-Wrinkle
Viola Tricolor: Wild Pansy

- Perennial herb with tricolored flowers
- Considered beneficial in disease of the heart – often called “Heartsease”
- Traditional herbal remedy:
  - Anti-inflammatory properties
- Viola tricolor contains:
  - Flavonoids
  - Tocopherol
  - Tannins
ABS Viola Tricolor Extract

- Modulates aquaporin activity
  - Increases the synthesis of **Aquaporin-3**
    o Involved in skin hydration, elasticity, barrier function and wound healing

- Water crosses cell membranes in 2 ways:
  - Diffusion through the lipid bilayer
  - Through water channels, called aquaporins

- Aquaporins
  - Membrane pore proteins
  - Function as channels to increase permeability of water
  - Additional mechanism of water transport (besides osmosis)
  - Synthesized by human keratinocytes - means to enhance the moisture of the skin – increases osmosis between the dermis & stratum corneum
ABS Viola Tricolor Extract: What is it?

- Natural, Active Botanical
- Rich in Polysaccharides:
  - Strong water holding capacity
  - Improves epidermal moisture
- Functions:
  - Powerful Hydration
  - Anti-Aging
  - Anti-Wrinkle
  - Hyaluronic Acid Synthesis
ABS Viola Tricolor Extract: How does it work?

- Increases synthesis of Aquaproins-3
- Increases synthesis of Hyaluronic Acid (HA)
- Increases proliferation of receptor sites (CD22) that bind HA
- Increases production of protease (Hyaluronan Synthase-2) necessary for HA production
Efficacy Data

• *In-vivo*
  - Increase in Hydration
  - Increase in Long Term Hydration
  - Changes in Wrinkle Characteristics

• *In-vitro*
  - Aquaporin-3 Synthesis
  - Increase in CD44 Receptor Sites
  - Hyaluronic Acid Production
  - Production of Hyaluronin Synthase-2
**Protocol**

- **Equipment:** Corneometer
- **Principle of measurement:** Frequency probe - measured electric capacitance of the skin based on the ability of intercellular water levels of the stratum corneum to conduct electrons
- **Subjects:** 25 (f)
- **Test area:** Calf region of leg

**In-vivo Efficacy: ABS Viola Tricolor Extract**

**Figure 1:** Hydration Results Comparing 4% ABS Viola Tricolor Extract and Placebo.

**Increase in Hydration**

<table>
<thead>
<tr>
<th>Percent (%) Increase</th>
<th>Mean % Increase in Hydration</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

- Lotion containing 4% ABS Viola Tricolor Extract
- Lotion containing Placebo
**Protocol**

- **Equipment:** Corneometer
- **Principle of measurement:** Frequency probe - measured electric capacitance of the skin based on the ability of intercellular water levels of the stratum corneum to conduct electrons
- **Subjects:** 25 (f)
- **Test area:** Calf region of leg; zones measured after 14 & 28 days

**In- vivo Efficacy: ABS Viola Tricolor Extract**

**Increase in Long Term Hydration**

![Graph showing hydration results comparing 4% ABS Viola Tricolor Extract and Placebo.]

*Figure 2:* Hydration Results Comparing 4% **ABS Viola Tricolor Extract** and Placebo.
In-\textit{vivo} Efficacy: ABS Viola Tricolor Extract

**Protocol**

- **Equipment**: Silicone Molds
- **Principle of measurement**: Profilometer equipped with an image analyzer
- **Subjects**: 25 (f)
- **Test area**: Outer eye area

**Mean Changes in Wrinkle Characteristics**

![Bar chart showing mean changes in wrinkle characteristics using 4% ABS Viola Tricolor Extract.](image)

**Figure 3**: Mean changes in wrinkle characteristics using 4% ABS Viola Tricolor Extract.
In-vitro Efficacy: ABS Viola Tricolor Extract

**Aquaporin-3 Synthesis**

![Aquaporin-3 Synthesis Graph](graph.png)

**Figure 4:** Aquaporin-3 production comparing ABS Viola Tricolor Extract, control and EGF.

**Protocol**

- Human keratinocytes were cultured & in KSFM medium & incubated for 24 hours @ 37°C with CO2 levels limited to 5.0%
- Image analysis was performed with BIO Profil Software
- The visible bands were than quantified using densitometry
In- vitro Efficacy: ABS Viola Tricolor Extract

Increase in CD44 Receptor Sites

![Bar chart showing the increase in CD44 receptor sites for different treatments.]

**Figure 5:** Results of the increase in CD44 following treatment with test materials.

**Protocol**

- Immunolabeling of human keratinocytes was performed after a 72-hour incubation period.
- Keratinocytes were then incubated for an additional 45 minutes @ 4C with the anti-CD44 immunoglobulin.
- A second antibody with luminescent flag was used to identify the immunolabeled cells.
- A quantification of fluorescence was performed on 10 cells.
**In- vitro Efficacy: ABS Viola Tricolor Extract**

**Hyaluronic Acid Production**

**Protocol**

- Human keratinocytes were cultured & in KSFM medium & incubated for 24 hours @ 37C with CO2 levels limited to 5.0%
- The keratinocytes were then treated with ABS Viola Tricolor Extract in a diluted culture medium. The cells were then incubated under the same conditions for 72 hours.
- The cultured supernatant was stored at -80C before the assay was performed – ELISA kit was used.

**Figure 6**: Hyaluronic Acid Production comparing ABS Viola Tricolor Extract and Control.
In- vitro Efficacy: ABS Viola Tricolor Extract

Protocol:
- Human keratinocytes were cultured & in KSFM medium & incubated for 24 hours @ 37C with CO2 levels limited to 5.0%
- The total RNA was then extracted form the cells & reverse transcriptase was used to obtain the DNA sequence analyzed by PCR
- Internal standard - β-actin mRNA
- Band intensity was quantified by image analysis - BIO profil system

Figure 7: Increase in mRNA comparing 1.0% ABS Viola Tricolor Extract and Placebo
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THANK YOU

For more information – Visit our website!

www.activeconceptsllc.com