**Clinical Study**

**Background**
- Chronological aging and photosaging leads to skin discoloration, age spots, and more critically, sagging and loss of elasticity on facial skin.
- A micropeptide technology (acetyl dipeptide, ADP) was developed to address these skin aging concerns.
- Proven multifunctional benefits on the skin surface with micropeptide size to facilitate penetration.

**Objective**
- This clinical study was designed to test the effectiveness of a facial cream with a unique blend of acetyl dipeptide technology along with brightening and firming ingredients to reduce the key signs of facial aging.

**Pre-Clinical Data on Acetyl Dipeptide**

**Gene expression profiling on living skin equivalent (LSE)**
- Whole transcriptome analysis and Gene Ontology (GO) was performed on RNAs extracted from LSE treated with acetyl dipeptide for 48 hours.
- Acetyl dipeptide exhibited significant induction of genes related to barrier, hydration, plumping, epidermal metabolism, and senescence downregulation/inhibition (Ref 1).

**In vitro cell culture evaluation of acetyl dipeptide**
- In human epidermal keratinocytes culture, acetyl dipeptide significantly inhibited inflammation markers IL-8 and TNF-α, pro-OSF vs. vehicle.
- In human fibroblast culture, acetyl dipeptide significantly increased the expression of five skin matrix components, including elastin, procollagen, hyaluronic acid, decorin, and fibronectin, p<0.05 (Ref 2).

**Ex vivo evaluation of biomarker induction by acetyl dipeptide**
- Human skin explant models were cultured and treated topically with acetyl dipeptide.
- Human skin fibroblast culture, acetyl dipeptide significantly increased the expression of five skin matrix components, including elastin, procollagen, hyaluronic acid, decorin, and fibronectin, p<0.05 (Ref 2).

**Results**

**Subject Demographics**
- 43 subjects completed the 16-week study (45 enrolled) as shown in the table below.

<table>
<thead>
<tr>
<th>Popularity</th>
<th># of Subjects (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>5 (15.2)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>25 (75.8)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2 (6.7)</td>
</tr>
<tr>
<td>Asian</td>
<td>2 (6.7)</td>
</tr>
</tbody>
</table>

**Tolerability**
- Tolerability assessment indicated that the test product was well tolerated and there were no adverse events reported.

**Clinical Study Methodology**
- **Objective:**
  - Design: 16-week, single-center, institutional review board-approved, prospective clinical study with direct comparison to baseline condition.
  - Subjects: Healthy females, ages 40-70 years, Fitzpatrick Skin Types I- VI.
  - Key inclusion criteria: Having mild to moderate jawline sagging with fine lines and/or hyperpigmentation by expert visual grading (3 to 6 on a 0 to 9 scale).

**Expert Grading**
- **Visual grading** exhibited statistically significant improvement in all targeted signs of aging starting at week 8 and continuing through week 16 on all parameters (Figure 2).

**Figure 2. Expert Grading of Clinical Improvement on Face**

**Clinical Study Findings**
- **New and prior pre-clinical data suggest that acetyl dipeptide inhibits inflammatory cytokines, strengthens skin’s barrier and boosts the support matrix through both gene and protein expression (e.g., procollagen III and elastin).**
- **The facial cream with acetyl dipeptide, firming, and brightening ingredients was well-tolerated and provides clinical and consumer-perceived benefits to jawline sagging, skin firmness, skin brightening, and overall signs of aging.**

**Clinical Grading**
- **Visible benefits to jawline contour and lift as well as overall skin discoloration and youthfulness further support the clinical grading (Figure 3).**

**Figure 3. Visible Improvement**

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**References**

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**Conclusions**
- **New and prior pre-clinical data suggest that acetyl dipeptide inhibits inflammatory cytokines, strengthens skin’s barrier and boosts the support matrix through both gene and protein expression (e.g., procollagen III and elastin).**
- **The facial cream with acetyl dipeptide, firming, and brightening ingredients was well-tolerated and provides clinical and consumer-perceived benefits to jawline sagging, skin firmness, skin brightening, and overall signs of aging.**

**Disclosures**
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