ACB Pisum Sativum Peptide

Anti-Aging, Antioxidant, Volumizing, Film-Forming, Moisturizing, Conditioning

Tomorrow’s Vision... Today!®
*16810 – ACB Pisum Sativum Peptide

Product Code: 16810

INCI Name: Pisum Sativum (Pea) Peptide

INCI Status: Conforms

Suggested Use Level: 1.0 - 5.0%

Suggested Applications: Anti-Aging, Antioxidant, Volumizing, Film-Former Moisturizing, Conditioning
Proteins

About Proteins

• Complex, organic macromolecules essential for sustaining life

• High molecular weights

• Vital components in hair and skin

• Common uses: Film-formers, Moisturizers, Emulsifiers, Strengthening Agents

• Use of Animal Proteins in cosmetics has shifted to Vegetable Proteins
  • Due to health and safety concerns
Humble Beginnings

• Soy, Oat and Wheat Proteins initially overshadowed Pisum Sativum

• Pisum Sativum, or peas, have been cultivated for food since 6000 BC

• Commonly used as an ingredient in thick soups and stews
Pisum Sativum

Gaining Popularity

- Pisum Sativum Protein peaked the interest of Nutrition and Health Advocates
  - Plant-based
  - Hypo-allergenic
  - Average Biological Value (BV) of 65.4%
    - Indicator of the biological activity of the protein
- Preferred vegetable protein according to a study conducted on the beneficial properties of Pisum Sativum Hydrolysate\(^1\)
  - Highly Soluble (easily digested)
  - Enhances Kidney Function
  - Lowers Blood Pressure

Reference:
Pisum Sativum

Benefits

• Complete source of Amino Acids
  • Most balanced amino acid profile of any vegetable protein
  • Lysine
  • Lysine functions as a vital building block in human biology
  • Lysine is an essential amino acid, meaning our bodies do not synthesize it naturally
  • Must be obtained from other sources
Pisum Sativum

**Benefits**

- Highest Lysine content compared to other hydrolyzed vegetable proteins
  - 7.22% of the protein is lysine
  - Second highest content of lysine is Soy Protein comprised of 5.74%
- Lysine promotes the health of the hair, scalp and skin
  - Contributes to protein formation
  - Assists in producing carnitine – known to metabolize fatty acids

**References:**
2) Helena Kloosterman; USDA National Nutrient Database for Standard Reference. Essential Amino Acids Search, soybeans
Hydrolysis

Protein Hydrolysis

• Hydrolyzing proteins breaks down the large molecules into smaller molecules

• Smaller molecules are more effective in cosmetics

• Hydrolysis can be conducted using
  • Acid with water
  • Alkaline with water
  • Enzymes with water

• Hydrolyzed Proteins = Lower Molecular Weight
  • 2,000 – 4,000 g/mol
Hydrolyzed proteins can be further modified for use in different applications.

Benefits of Hydrolyzed Proteins:
- Lower Molecular Weight
- Enhance feel
- Increase Shine
- Hydration
- Conditioning
ACB Pisum Sativum Peptide

Protein Hydrolysis

• Novel Manufacturing Technique
  • Controlled Reaction
  • Unique process in which microorganisms are employed to hydrolyze the *Pisum sativum* protein into smaller subunits
  • *Lactobacillus* and *Pisum sativum* protein are inoculated, and the *Lactobacillus* secretes lactic acid, inducing hydrolysis of the *Pisum sativum* protein
  • Results in unique benefits
    → HAIR VOLUMIZING
    → ANTIOXIDANT PROPERTIES
In-vivo Efficacy Data: ACB Pisum Sativum Peptide

Assessment of Hair Characteristics

Figure 1: Increase in hair hydration when treated with 2.0% ACB Pisum Sativum Peptide.

**Protocol**

- Sensory evaluation was conducted for baseline
- **Principle of measurement**: Rubic Measurement from 1-10
- **Test area**: Hair
- **Concentration of active used**: 2.0%
- **Frequency of application**: Single Application
**In-vivo Efficacy Data: ACB Pisum Sativum Peptide**

**Half Head Study**

**Protocol**

- Sensory evaluation was conducted for baseline
- Subject washed & dried hair as normal
- **Test area**: Hair
- **Concentration of active used**: 2.0%
- **Principle of measurement**: Participant assessed hair characteristics

*Figure 2. Full Head Baseline Photo of Untreated Hair.*
In-vivo Efficacy Data: ACB Pisum Sativum Peptide

Half Head Study

2.0% ACB Pisum Sativum Peptide in Biolage Shampoo

Untreated Biolage Control Shampoo

2.0% ACB Pisum Sativum Peptide in Biolage Conditioner

Untreated Biolage Control Conditioner

Results

• ACB Pisum Sativum Peptide improved hair characteristics 101% more than the control shampoo

• Improved volume, softness & dry/wet combability

• ACB Pisum Sativum Peptide improved hair characteristics 61% more than the control conditioner

• Improved volume & dry/wet combability

Figure 3. Half-Head photo of hair treated with test and control shampoos.

Figure 4. Half-Head Photo of hair treated with test and control conditioners.
**In-vivo Efficacy Data: ACB Pisum Sativum Peptide**

**Protocol**

- **Equipment**: DPM 9003 Nova Impedence Meter
- **Principle of measurement**: Conductance, single frequency
- **Subjects**: 10 (m/f)
- **Test area**: Hair
- **Concentration of active used**: 2.0%
- **Frequency of application**: Single Application

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**Increase in Hydration**

![Bar chart showing increase in hair hydration](image)

**Figure 5.** Increase in hair hydration when treated with 2.0% ACB Pisum Sativum Peptide.
In-vivo Efficacy Data: ACB Pisum Sativum Peptide

Percent Difference of Sensory Assessment

Figure 6. Hair Assessment results for sensory characteristics.

Protocol

• Compared to control shampoo improved:
  • Volume-75%
  • Softness-233%
  • Dry/Wet Combability-200%, 150% respectively

• Compared to control conditioner improved:
  • Volume-167%
  • Softness-67%
  • Dry/Wet Combability-67%
In-vitro Efficacy Data: ACB Pisum Sativum Peptide

Microscopy Imaging

Immediately Following Application

- Figure 7. Individual strand immediately following treatment with 2.0% Wheat Hydrolysate, note beading
- Figure 8. Individual strand immediately following treatment with 2.0% ACB Pisum Sativum Peptide

One Hour After Application

- Figure 9. Individual strand four hours after treatment with 2.0% Wheat Hydrolysate, note beading
- Figure 10. Individual strand four hours after treatment with 2.0% ACB Pisum Sativum Peptide

Protocol

- **Equipment:** Zeiss Axioplan Microscope/Ienapol Polarized Light Microscope/iSolution Software
- **Materials:** 60 individual strands of hair
- **Test Quantity:** 2.0% in Water
- **Frequency of Application:** Single Application
- **Frequency of Measurement:** Baseline, immediately following application & 4 hours after application
In-vitro Efficacy Data: ACB Pisum Sativum Peptide

Increase in Volume

![Graph showing increase in volume immediately following application and 4 hours after application.]

**Protocol**

- **Equipment:** Zeiss Axioplan Microscope/lenapol Polarized Light Microscope/iSolution Software
- **Materials:** 60 individual strands of hair
- **Test Quantity:** 2.0% in Water
- **Frequency of Application:** Single Application
- **Frequency of Measurement:** Baseline, immediately following application & 4 hours after application

**Figure 11:** Increase in hair diameter after application of 2.0% ACB Pisum Sativum Peptide compared to 2.0% Wheat Hydrolysate.
In-vitro Efficacy Data: ACB Pisum Sativum Peptide

ORAC Assay

Protocol

- Trolox® was used as the positive control
- Test Quantity: 0.5%
- Fluorescent measurements were taken every two minutes for two hours
- ACB Pisum Sativum Peptide showed antioxidant activity at levels as low as 0.5% concentration

Figure 12. Antioxidant capacity of test materials.
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ACTIVE CONCEPTS LLC

THANK YOU