

Code Number:	16810
INCI Nomenclature:	Pisum Sativum (Pea) Peptide
INCI Status:	Conforms
Suggested Use Levels:	1.0 - 5.0%
Suggested Applications:	Anti-aging, Antioxidant, Volumizing, Film Forming, Moisturizing, Conditioning

Anti-Aging is the latest trend in Hair Care and **ACB Pisum Sativum Peptide** provides a potent and cost effective solution. **ACB Pisum Sativum Peptide** delivers Volumizing and antioxidant driven Anti-Aging benefits as well as film forming and conditioning benefits. Produced using a proprietary fermentation process this peptide moves hydrolyzed vegetable proteins into a new era.

Proteins are traditionally hydrolyzed using acids, alkalis, and enzymes or some combination thereof to produce random amino acid sequences. While traditional methods of hydrolysis are well accepted and effective, they are simplistic efforts to duplicate the normal cellular protein catabolism. Cells digest proteins into specific sequences to meet their nutritional needs. Active Concepts has harnessed the digestive abilities of a proprietary non-GMO bacterial strain, *Lactobacillus*, to produce *Pisum sativum* peptides with a controlled molecular weight of approximately 2000 Da.

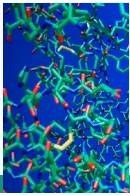


Hydrolyzed proteins such as soy, wheat or oat have been used to impart conditioning benefits and film forming properties to the hair for decades. These hydrolysates are comprised of peptides with random amino acids sequences that aid in improving the elasticity and texture of the skin and hydration of the hair. Recent efforts within the Nutritional Industry have focused on the selection of more precise protein fragments to improve the benefits of supplements. In the course of that research, it has become clear that protein fragments from different sources have varied benefits. One of the Outliers is *Pisum Sativum*.

Recently, *Pisum sativum* Proteins have attracted the interest of Nutrition and Health advocates as a plant-based, hypoallergenic protein that yields a high Biological Value (BV). On average, *Pisum sativum* Protein has a 65.4% BV, in comparison to Soy Protein which has 50.0% BV average and Wheat Protein with a 49.0% BV average. Biological Value is an accurate indicator of the available nutritional potential of a protein. While it may have had a modest beginning, the enhanced bioavailability of *Pisum sativum* Proteins has caught the market by storm, boasting this product to be the quality alternative to other vegetable proteins which provides benefits such as high solubility (for easy digestion), enhanced kidney function, and lowering of the blood pressure¹.

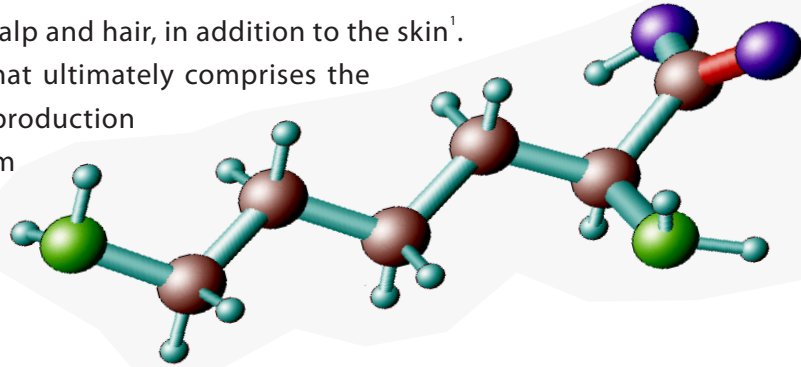
Pisum sativum protein is a complete source of Essential amino acids. In fact, *Pisum sativum* has the most balanced amino acid profile of any vegetable protein, consisting of 22 amino acids, notably, rich in lysine¹. Lysine functions as a vital building block in human biology. Since lysine synthesis does not occur in the body naturally it must be obtained from outside sources, such as protein derived from *Pisum sativum*.





ACB Pisum Sativum Peptide

Lysine has been shown to promote the health of the scalp and hair, in addition to the skin¹. In fact, lysine is a key part of the amino acid chain that ultimately comprises the obligate keratin dimer. Lysine is also a precursor in the production of carnitine, a chemical that enhances the metabolism of fatty acids, potentially improving the protective and conditioning benefits of sebum on the hair¹. The catabolized *Pisum sativum* protein also has been evaluated for its antioxidant potential².



Increased hydration of the hair is a key benefit of hydrolyzed proteins. As evidenced in an *in-vivo* study, ten (M/F) subjects between the ages of 24 and 37 were instructed to apply either a solution containing 5.0% **ACB Pisum Sativum Peptide**, or a 5.0% solution containing Wheat Hydrolysate to their hair as a leave-in conditioner, once a day for a week. A DPM 9003 Nova Impedance Meter was used to test the moisture levels on the hair. The results demonstrated a comparable increase in hair hydration on subjects using both a 5.0% solution of **ACB Pisum Sativum Peptide** and a 5.0% solution of Wheat Hydrolysate.

Increase in Hair Hydration

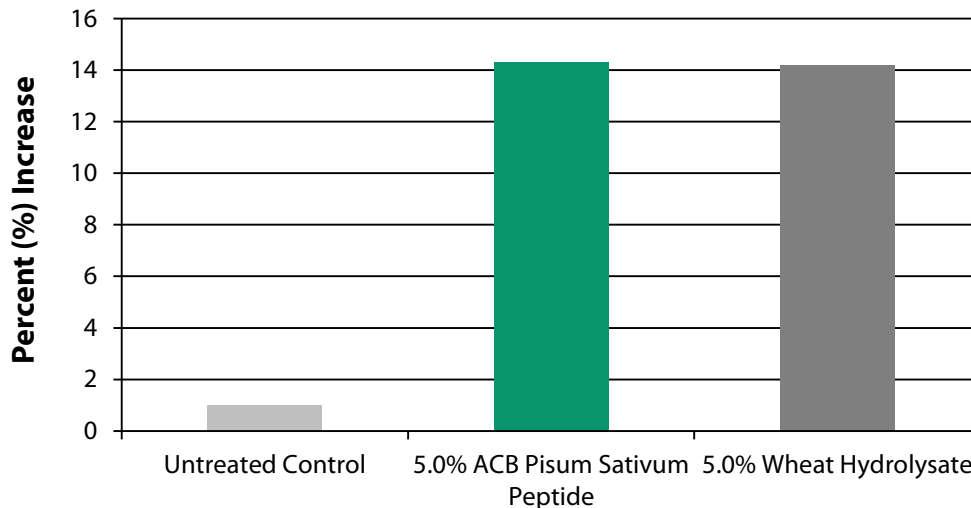
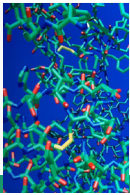


Figure 1: Percent increase in hair hydration when treated with 5.0% of **ACB Pisum Sativum Peptide**

Two primary drivers of Hair Aging are oxidation of hair lipids resulting in subsequent protein damage and a loss of volume due to the damage. **ACB Pisum Sativum Peptide** offers significant benefits in these areas when compared to typical vegetable protein hydrolysates. ORAC (Oxygen Radical Absorbance Capacity) is a measure of a material's potential to protect against Oxidative Stress or Reactive Oxygen Species (ROS).





ACB Pisum Sativum Peptide

An ORAC study conducted on **ACB Pisum Sativum Peptide** showed its capability of reducing the presence of Reactive Oxygen Species compared with Trolox, the vitamin E analog used as the control. The ORAC value of the other protein hydrolysate show no antioxidant capacity. **ACB Pisum Sativum Peptide** provides strong antioxidant attributes which deliver more than just moisturizing and conditioning to the hair.

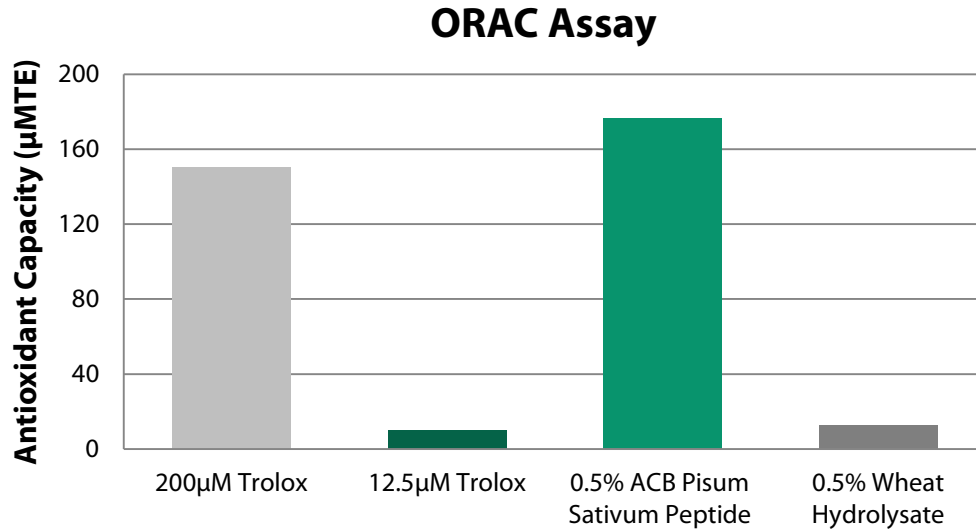


Figure 2: Antioxidant capacity of test materials

A study conducted at Gaston College Technology Center measured the diameter of color treated hair at different intervals to determine an increase in hair thickness. Using 60 strands of hair, a 2% solution of **ACB Pisum Sativum Peptide** was applied to each strand of hair. Immediate results showed an average increase in hair diameter of 11.08% with an average increase of 9.65% one hour after application.

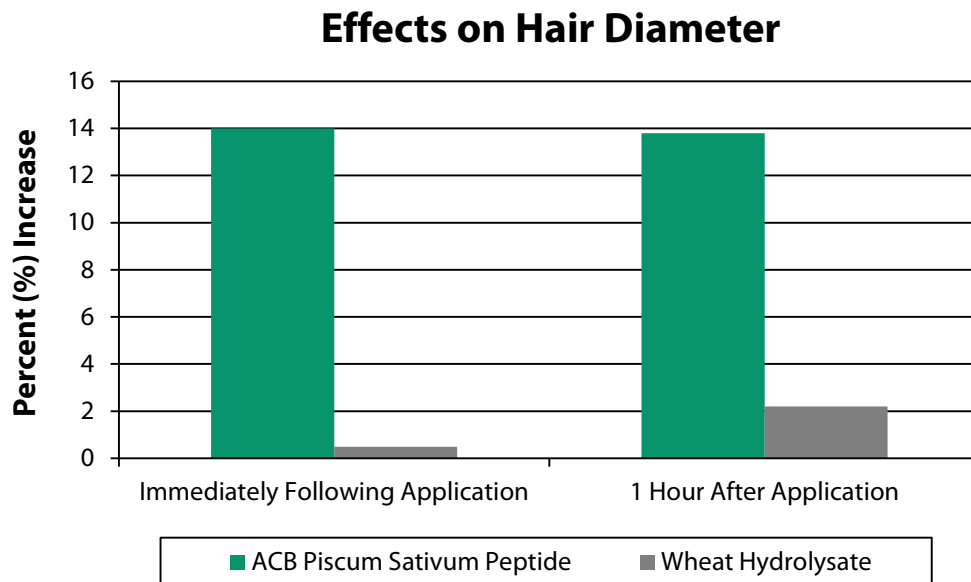
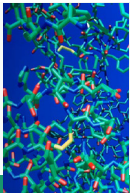


Figure 3: Increase in hair diameter after application of **ACB Pisum Sativum Peptide** compared to Wheat Hydrolysate





ACB Pisum Sativum Peptide

After placing individual hair strands under a microscope, Microscopy Imaging of the individual strands were taken to visually demonstrate the increase in hair diameter achieved when using **ACB Pisum Sativum Peptide** in comparison to the use of Wheat Hydrolysate.

Microscopy Imaging of Hair Strands

Immediately Following Application



Figure 4: Individual strand immediately following treatment with Wheat Hydrolysate, note product beading

Immediately Following Application



Figure 5: Individual strand immediately following treatment with **ACB Pisum Sativum Peptide**

One Hour After Application



Figure 6: Individual strand one hour after treatment with Wheat Hydrolysate, note product beading

One Hour After Application

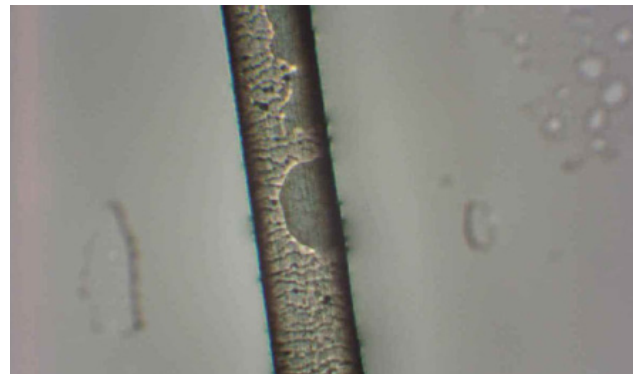


Figure 7: Individual strand one hour after treatment with **ACB Pisum Sativum Peptide**

ACB Pisum Sativum Peptide's film-forming properties render it an effective moisturizer that provides protective benefits and a silky feel to the hair or skin. Recent demand for anti-aging hair products has prompted formulators to seek out materials and manufacturing methods that will allow targeted claims. **ACB Pisum Sativum Peptide** reduces the damage caused by free radicals to promote the scalp and follicle health essential producing youthful, voluminous looking hair.

References:

- 1) Braverman, E. R. and C. C. Pfeiffer. The Healing Nutrients Within. New Canaan, CT: Keats Publishing, Inc., 1987, page 91. Buchaan, J. H. and M. S. Otterburn. "Some structural comparisons amino acids and the effects on skin, hair, nails and eyes." IRCS Med Sci 12 (1984): 691 - 692
- 2) Ndiaye F, Vuong T, Duarte J, Aluko R, Matar C. Anti-oxidant, anti-inflammatory and immunomodulating properties of an enzymatic protein hydrolysate from field pea seeds. Eur J Nutr. 2012; 51:29-37