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Active Concepts is built upon three pillars; innovative technology platforms, market leading customer support, and products with a purpose. For almost two decades, Active Concepts has diligently embarked on an endeavor to develop complex, active ingredients that provide formulators with unmatched function, in order to meet and exceed the rapidly increasing consumer demand for more effective cosmetic technologies.

Proteins are the building blocks of our skin and hair. For decades, proteins have played a dominant role in the personal care industry. Peptides, enzymes, amino acids, and other proteinaceous materials continue to be used in nearly every aspect of personal care. With efficacy ranging from antimicrobial preservation technology, to structural modifiers for skin and hair, proteins remain a key pillar in this ever-changing space. Today’s formulator demands stability, safety, and efficacy at a level never before seen. Active Concepts protein technology leads the way in these key categories, bringing about tomorrow’s future ingredients… today!

Active Concepts is constantly observing global market trends and creating new innovations, responding to the latest consumer demands. Active Concepts delivers a variety of scientifically tested active ingredients that address specific needs to cover the full range of requirements for the modern formulator. Using scientific methods, Active Concepts has developed multifunctional active ingredients supported by proven efficacy data to deliver exceptional benefits to nearly any formulation.

Active ingredients are assigned to a category for ease of browsing throughout this document. These categories are based on market demands and needs. Whether it be creating enzymes with high level stability, or oil soluble powder solutions to capitalize on anhydrous consumer demands. Active Concepts offers innovative, multifunctional active ingredients to support formulator’s success.
What is a protein?
Medium to large sized molecules comprised of two or more long chains of amino acids that play essential roles in all living organisms as structural components, catalysts, and even antibodies.

Molecular Weight
Based on their varying size or Molecular weight, proteins can play massively different roles. In addition to sensitization which can be characteristic of low molecular weight proteins, the overall MW can play a role in the overall benefit, delivery, and even mechanical properties. Controlling MW through various technologies is a key challenge in creating cutting edge new products and efficacy.

Structure
Overall structure plays a critical role in the effectiveness of proteinaceous material. Long chain fibrous proteins such as collagen or elastin are important structural proteins for the skin and hair, while Enzymes and Peptides can perform as catalysts or even antibodies in key molecular pathways.
The Facts

The use of proteins in topical personal care application has increased significantly in the last 5 years. This trend is expected to continue with the advent of new technologies for processing and isolating unique protein sources. Supplementary scientific studies have corroborated the findings that various proteinaceous materials are critical within cosmetic formulations. Whereas most protein derivatives used in cosmetics are obtain from simple proteins (fibrous and globular), conjugated proteins (proteoglycans, glycoproteins, etc.) among other newly accessible derivatives are becoming necessary to compete in the ever changing, trend driven industry. Having access to these key technologies will continue to play an important role in keeping your brand and company competitive.

Not all proteins are created equal. Traditional hydrolysis in proteins are well accepted and effective, but they are an overly simplistic method to duplicate normal cellular protein catabolism where cells work to digest proteins into specific sequences. Using proprietary fermentation technology, Active Concepts has harnessed a variety of Non-GMO bacterial species such as *Lactobaillis bulgaricus* in order to biodegrade, and naturally process proteins in contingency with more traditional methods. This technology has allowed us to create unique, natural, hydrolyzed protein derivatives that are significantly more bio-available. This technology has also been designed to create proteins controlled for Molecular weight in order to minimize potential sensitizing effects.

Protein films have been shown to smooth the cuticle of the hair. The resulting fibers show higher shine and improved combability and manageability to the condition of the hair. Soluble protein hydrolysates that are controlled for Molecular Weight (1-3k Daltons) can act as colloids in solution and are therefore able to reduce the traditional damage caused by standard surfactant systems. In shampoo’s for either retail or salon use, this effect can be used to create shampoos or conditioners that are less stripping. Composed entirely of amino acids, hydrolyzed fibrous proteins are highly hygroscopic and are able to draw moisture from the environments, making them ideal for most haircare applications.
## Enzymes

Enzymes are proteins that act as catalysts to control, maintain, and regulate various metabolic pathways within our cells. Enzymes can be used to increase specific functions in our cells to improve various functions such as antioxidation, cellular proliferation, or even inflammation. Traditionally, enzymes are created with the end goal of supporting high level efficacy. Often claims regarding activity level are displayed in an attempt to sway formulators. Although demanding high level efficacy is not wrong, more often than not these claims do not translate to the high level efficacy they promise. The traditional approach to cosmetic systems such as these is to isolate specific compounds for cosmetic formulation. Often times isolating singular components will actually cause problems in stability, and remove other key components necessary for modulating the actives efficacy. At Active Concepts we aim to isolate entire systems that work synergistically to deliver high level efficacy, in a package that has been engineered to maintain efficacy and stability within a cosmetic formulation.

<table>
<thead>
<tr>
<th>Product Code &amp; Name</th>
<th>INCI Name</th>
<th>Mechanism</th>
<th>Multifunctional Benefits</th>
</tr>
</thead>
</table>
| 20496 ACB Modified Pumpkin Enzyme PF      | Lactobacillus/Pumpkin Fruit Ferment Filtrate                             | Using Lactobacillus to breakdown this enzyme, we are able to harness highly bioavailable proteolytic enzymes to impart benefits to the skin and hair. | • Strong Exfoliator  
  • Versatile in Formulations  
  • Strong Moisturizing Benefits |
| 20440PF ACB Modified Pomegranate Enzyme PF | Lactobacillus/Punica Granatum Fruit Ferment Extract                      | Proteolytic enzymes, which help gently breakdown and digest large proteins that have accumulated on the hair and scalp.                 | • Functional Active  
  • Natural Exfoliation  
  • Effective for Skin and Hair formulations |
| 16647PF ACB Modified Papaya Enzyme PF      | Lactobacillus/Papaya Fruit Ferment Extract                               | Helps to dissolve and digest the dry cells found on the skin's surface leaving the skin looking revitalized.                            | • All Natural Origin  
  • Improve Appearance of Fine lines and Wrinkles  
  • Skin Conditioning |
| 10268PF ABS Pap-Ango Enzyme PF             | Carica Papaya (Papaya) Fruit Extract & Mangifera Indica (Mango) Fruit Extract | Papain in papaya and various mango enzymes are attributed with soothing skin irritations and exfoliating dead cells.               | • Cellular Renewal  
  • Anti-Aging  
  • Good for Problem Skin |
| 20360 ACB Cranberry Enzyme                | Lactobacillus/Vaccinium Macrocarpon Fruit Ferment Filtrate               | Fruit Enzymes are attributed with soothing skin irritations and exfoliated dead cells, while also capable of retaining proteolytic activity over a wide pH range. | • Natural Chemical Exfoliation  
  • All Natural Origin |
| 20395PF AC Sebum Control Enzyme PF        | Butylene Glycol & Water & Spiraea Ulmaria Extract                       | Reduces the activity of the sebaceous glands by inhibiting the activity of 5a-reductase. It will limit the amount of sebum secretion due to its astringency | • Sebum Control  
  • Ideal For Problem Skin  
  • Alternative Approach for Oily Skin  
  • Controls Dryness |
Proteins

The vast majority of cosmetic scientists and formulators recognize the beneficial effects of using protein rich substances in cosmetic formulations for both the skin and hair. In addition to their more widely understood and accepted role of binding water within the horny layer of skin and its subordinates, proteins are capable of providing a great deal of other benefits. Through hydrolyzation (the process by which proteinaceous material is made water soluble), smaller proteinaceous material is made more bioavailable and useful to skin and hair. Within the body, 3 subsets of protein make up 25% of the skin. Dermal proteins are critical in maintaining flexibility, elasticity and firmness. By the application of proteinaceous material from varying plant and animal sources, Active Concepts is able to offer real world improvements to both the skin and hair. Differentiation of proteins by Molecular weight allows us to maintain the same sourcing with key difference in efficacy, and potential skin sensitization. By controlling for Molecular weight, we are able to reduce perceivable irritation while simultaneously modulating efficacy.

<table>
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| 20037 ACB Quinoa Protein | Hydrolyzed Quinoa | Through fermentation we are able to isolate and concentrate the naturally occurring proteins of the seed and thus standardize the amino acid content. | • Moisturizing Super-Food  
• Improves Barrier Function  
• Noticeably Improves Hair Shine  
• Enhances Hair Manageability |
| 20036 ACB Kale Protein Blend | Hydrolyzed Kale Protein & Hydrolyzed Carrot Protein & Hydrolyzed Lemon Protein | Combines the power of kale, carrot, and lemon into one nutrient rich formula designed to condition and moisturize while fighting the signs of aging and UV. | • Noticeably Improves Hair Shine  
• Volumizing Protein  
• Enhances Hair Manageability |
| 20007 ACB Orange Water Quinoa Protein | Citrus Aurantium Dulcis (Orange) Fruit Water & Hydrolyzed Quinoa | Using the natural vitamin and mineral composition of two of the hottest foods in the nutrition industry to impart conditioning and moisturizing benefits. | • Brand Differentiation  
• Highly Marketable Origin  
• Skin Conditioning |
| 20342PF ACB Yerba Santa Glycoprotein PF | Lactobacillus/Eriodictyon Californicum Ferment Extract | Transmits a moisturizing effect via hydrogen bonding of water by its glycoprotein components. | • Enhances Aesthetics of Final Formulas  
• Hydration and Lubricity  
• Improves Barrier Function |
| 20816 ABS Sweet Almond Protein G | Glycerin & Prunus Amygdalus Dulcis (Sweet Almond) Protein | Prunus Amygdalus is known for imparting intense moisturization benefits through the proteins natural ability to bind water. | • Moisturization  
• Skin Conditioning  
• Film Forming Benefits |
| 20584PF AC Cashmere Protein PF | Hydrolyzed Wool | Soluble protein hydrolysates in the 1-3k molecular weight range act as colloids in solution and as such they reduce the damage produced by typical surfactants. | • Great Overall Conditioning  
• Intense Moisturizing Benefits  
• Provides Protection |
The personal care industry is an ever-changing space. Among the market segments, the demand for anhydrous solutions is at an all time high. As sustainability and transparency continue to grow in importance in nearly every market, water is becoming a contentious issue in next generation cosmetics. In Europe, dubbed the “Precious Water” trend, it aims to make suppliers, formulators, and consumers take a step back to reconsider how their lifestyles and products effect what have otherwise been considered limitless resources. In response, formulators have been searching for the latest in Oil Soluble/anhydrous active ingredients. Active Concepts means to take our unparalleled view of sustainability, and apply next generation efficacy for the latest in sustainable, green cosmetics. There are a variety of methods for removing water from formulation. in powder products, there are of course freeze dried goods that can be reconstituted, as well as dehydrated. In addition, advances in fractionation technology has given us an unparalleled look into lipids and other naturally occuring oils that were previously unavailable.

<table>
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<tr>
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| 22005 AC Oat Protein Powder | Hydrolyzed Oat Protein | The high concentrations in starches and beta-glucan are responsible for the protective and water-holding function of the oats. | • Cleansing Benefits  
• Skin Conditioning  
• Great for Skin and Hair |
| 20642 AC Rice Protein Powder | Hydrolyzed Soy Protein | The rice protein is powdered allowing for increased moisturization as well as better dispersion and permeability on the skin and hair, due to its decreased particle size. | • Great for Oil based Formulas  
• Anti-Aging |
| 22018 AC Oat Kernel Protein Powder | Avena Sativa (Oat) Kernel Protein | Capable of penetrating the hair shaft or stratum corneum to deliver intense moisturizing and conditioning benefits. | • Gentle Exfoliation  
• Anti-Aging Benefits  
• Skin Conditioning |
| 20246 ACB Papaya Enzyme OS | Lactobacillus/Papaya Fruit Ferment Extract & Carica Papaya (Papaya) Seed Oil | Papain in papaya and various mango enzymes are attributed with soothing skin irritations and exfoliating dead cells. | • Strong Marketing Potential  
• Superfood  
• Great for Oil based Formulas |
| 20646 AC Cashmere Protein OS | Cocoyl Hydrolyzed Wool | Soluble protein hydrolysates in the 1-3k molecular weight range act as colloids in solution and as such they reduce the damage produced by typical surfactants. | • Great Overall Conditioning  
• Intense Moisturizing Benefits  
• Provides Protection |
| 20616 AC Wheat Hydrolysate OS | Cocoyl Hydrolyzed Wheat Protein | Protein hydrolysatge improves surfactant skin compatibility while the fatty acid moiety increases foaming properties. | • Conditioning Benefits  
• Moisturizing  
• Anti-Aging |
Peptides

A peptide is a small chain of <50 Amino acids (the building blocks of proteins) that are present in nearly all biological material. Peptides are unique in that, at this molecular level, the difference in sourcing can actually lead to different efficacy. For example, pea proteins have an advanced Lysine profile (higher overall concentration compared to standard plant sources), and due to this concentration they are ideal for imparting intense antioxidant benefits to both the skin and hair. Peptides can also be used as vehicles for inter and intracellular communication. Various genomic, proteomic and metabolic pathways are able to crosstalk through peptide interface. The range in efficacy among this class of “proteins” is staggering, from antimicrobial, to skin tightening benefits, adding peptide technology to your formula is sure to provide next generation efficacy, in a highly unique and marketable package!

<table>
<thead>
<tr>
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<th>INCI Name</th>
<th>Mechanism</th>
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</tr>
</thead>
</table>
| 16810 ACB Pisum Sativum Peptide      | Pisum Sativum (Pea) Peptide | Using Lactobacillus bulgaricus to produce ACB Pisum Sativum Peptide with a controlled molecular weight of approximately 2k DA. | • Anti-Aging Skin & Hair Care  
• Scalp and Follicle Health  
• Intense Antioxidant Protection |
| 20458PF AC DermaPeptide Warming PF   | Lactobacillus/Capsicum Frutescens Fruit Ferment Extract | Capsaicinoid’s interact with sensory neurons by binding to receptors in the brain called Vanilloid Receptor Subtype 1 (VR1). | • Increased Microcirculation  
• Warming Sensation  
• Sensorial Stimulation |
| 20456PF AC DermaPeptide Tightening PF| Hydrolyzed Wheat Protein   | The molecular weight is small enough to readily solubilize in a mixture yet large enough to form a protective, tightening barrier on the skin. | • Barrier Forming  
• Moisturization  
• Gluten Free |
| 20455PF AC DermaPeptide Toning PF    | Water & Yeast Extract      | We have isolated a specific peptide sequence from yeast that may actually increase the production of collagens IV and VII as well as glycoproteins. | • Collagen Synthesis  
• Wrinkle Reduction  
• Tone & Elasticity |
| 20464PF AC DermaPeptide Tanning PF   | Lactobacillus Ferment Lysate Filtrate | By using peptides that are capable of binding to the MC1R, much like α-MSH and ASP. | • Functional Active  
• Self-Tanning Products  
• Promotes Eumelanin Synthesis  
• Helps Achieve a Dark Long-Lasting Tan |
| 20454PF AC DermaPeptide Revitalizing PF| Hydrolyzed Rice Protein    | Peptide that stimulates the proliferation of fibroblasts, therefore improving cell propagation and an increase in cellular metabolism. | • Cellular Revitalization  
• Cellular Proliferation  
• Moisturizing |
Collagen & Hydrolysates

Hydrolyzed Collagen and other proteins that have undergone hydrolysis are a mainstay in cosmetics. Some of the most successful brands on the market have capitalized on unique collagen based extracts. Primarily used in Skin and Hair care preparations, collagen is also being found more commonly in color cosmetics as well. In haircare, collagen enhances the appearance and feel of the hair by increasing parameters such as body, suppleness, or sheen. Some Collagen is even effective at improving the texture or tensile characteristics of hair that has been damaged due to excessive treatment (ie. Styling, bleaching, etc.). Foaming Collagen’s have the ability to create mild foaming conditions and perform as natural surfactants, these are ideal for applications in sensitive skin, scalp care, and even baby care products. Active Concepts offers a wide range of Collagen and Hydrolyzed proteins to bring marketable origin and hard science to your next formulation!

<table>
<thead>
<tr>
<th>Product Code &amp; Name</th>
<th>INCI Name</th>
<th>Mechanism</th>
<th>Multifunctional Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>20595PF AC Soluble Elastin PF</td>
<td>Hydrolyzed Elastin</td>
<td>Flexible amino acid chains allow for the formation of a flexible film on the surface of the skin and hair that enhances suppleness and helps retain moisture.</td>
<td>• Works for Fine Lines and Wrinkles  • Anti-Aging Benefits  • Natural and Potent Antioxidant</td>
</tr>
<tr>
<td>20624PF AC Plant Keratin PF</td>
<td>Hydrolyzed Corn Protein &amp; Hydrolyzed Wheat Protein &amp; Hydrolyzed Soy Protein</td>
<td>Penetrates the outer layers of the stratum corneum to provide hydrating benefits while forming a film that minimizes trans-epidermal water loss (TEWL).</td>
<td>• Versatile in Formulations  • Intense Moisturizing Benefits  • Conditions Hair and Skin</td>
</tr>
<tr>
<td>20739 AC Marine Collagen PF</td>
<td>Soluble Collagen</td>
<td>May be used to restore one’s youthful appearance by hydrating the skin and helping to increase its natural collagen production.</td>
<td>• Structural Benefits  • Versatile in Formulations  • Tightening Capabilities</td>
</tr>
<tr>
<td>20611PF AC Foaming Wheat PF</td>
<td>Sodium Cocoyl Hydrolyzed Wheat Protein</td>
<td>Protein hydrolysate improves surfactant skin compatibility while the fatty acid moiety increases foaming properties.</td>
<td>• Conditioning Benefits  • Gentle Cleansing  • High Marketing Appeal</td>
</tr>
<tr>
<td>20044PF AC Keratin Hydrolysate 20 PF</td>
<td>Water &amp; Hydrolyzed Keratin</td>
<td>Keratin works to increase the strength of the hair through bonding.</td>
<td>• Sustainable  • Great Conditioning Benefits  • Hair Protection</td>
</tr>
<tr>
<td>20531 AC Yogurt Hydrolysate SF</td>
<td>Hydrolyzed Yogurt Protein</td>
<td>These proteins are hydrolyzed down to a lower molecular weight thus enhancing its moisturization benefits.</td>
<td>• Intense Moisturization  • Topical Probiotic  • Great for All Formulations</td>
</tr>
<tr>
<td>20645PF AC Vegetable Collagen PF</td>
<td>Vegetable Collagen</td>
<td>Created to mimic the structure of collagen and is capable of providing a functional equivalent that supports the youthful elasticity and suppleness of skin.</td>
<td>• Plant-derived alternative  • Hydrating  • Conditioning</td>
</tr>
</tbody>
</table>
Shampoo and Face Wash

Cleanse and care for the face and hair with this 2-in-1 product. **ACB Kale Protein Blend** combines the power of kale, carrot, and lemon into one nutrient rich formula to moisturize and condition the skin while increasing manageability of the hair.

<table>
<thead>
<tr>
<th>Phase A</th>
<th>Trade Name</th>
<th>INCI Name</th>
<th>%</th>
<th>Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deionized water</td>
<td>Water (Aqua)</td>
<td>51.90</td>
<td>Local</td>
</tr>
<tr>
<td></td>
<td>Disodium EDTA</td>
<td>Disodium EDTA</td>
<td>0.10</td>
<td>Spectrum Chemical</td>
</tr>
<tr>
<td></td>
<td>Calfoam® ES-302</td>
<td>Sodium laureth sulfate</td>
<td>13.00</td>
<td>Nexeo Solutions</td>
</tr>
<tr>
<td></td>
<td>Cola® Teric COAB-UP</td>
<td>Cocamidopropyl betaine</td>
<td>4.00</td>
<td>Colonial Chemical</td>
</tr>
<tr>
<td></td>
<td>Pureact WS</td>
<td>Sodium methyl cocoyl taurate</td>
<td>5.00</td>
<td>Innospec</td>
</tr>
<tr>
<td>Phase B</td>
<td>Masamide® CO</td>
<td>Cocamide DEA</td>
<td>4.00</td>
<td>Pilot Chemical</td>
</tr>
<tr>
<td></td>
<td>Glucolam® MG</td>
<td>PEG-120 methyl glucose dioleate</td>
<td>3.00</td>
<td>Aqia</td>
</tr>
<tr>
<td>Phase C</td>
<td>Citric acid</td>
<td>Citric acid</td>
<td>q.s.</td>
<td>Spectrum Chemical</td>
</tr>
<tr>
<td>Phase D</td>
<td>ACB Pism Sativum Peptide</td>
<td>Pisum Sativum (Pea) Peptide</td>
<td>3.00</td>
<td>Active Concepts</td>
</tr>
<tr>
<td></td>
<td>Deionized water</td>
<td>Water (Aqua)</td>
<td>10.00</td>
<td>Local</td>
</tr>
<tr>
<td></td>
<td>ACB Kale Protein Blend</td>
<td>Hydrolyzed Kale Protein &amp; Hydrolyzed Carrot Protein &amp; Hydrolyzed Lemon Protein</td>
<td>2.00</td>
<td>Active Concepts</td>
</tr>
<tr>
<td>Phase E</td>
<td>Leucidal® Liquid Complete</td>
<td>Leuconostoc/Radish Root Ferment Filtrate &amp; Lactobacillus &amp; Cocos Nucifera (Coconut) Fruit Extract</td>
<td>4.00</td>
<td>Active Micro Technologies</td>
</tr>
<tr>
<td></td>
<td>Fragrance* (FAV-118077)</td>
<td>optional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure**

1. Mix Phase A until it is homogeneous.
2. Add Phase A to a mixed Phase B under stirring.
3. Adjust pH to 6.5-7 using Citric Acid.
4. Pre-mix Phase D and add to main beaker while stirring.
5. Cool and add Phase E.