



## Lupin Protein Hydrolysate

### PRODUCT DESCRIPTION

The Lupin Protein Hydrolysates belongs to the Hydrolyzed Vegetal Protein (HVP) group of products of Costantino Food and Beverage Hydrolysates production. HVP families have been developed by Costantino along the years to optimize the use of the vegetal proteins in multiple food applications. This group of product can delivery both nutritional functions and simultaneously technical properties. Purity and clarity of the products are the result of an continuous improvement in the selection and optimization of the best supply chain and a stable and capable process.

Lupin Protein Hydrolysates is the result of the skill of Costantino in the selection of the best optimized pea protein source in combination with an hydrolysis able to deliver the optimized performance in term of structure and, thanks to its taste almost neuter allow nutritional contribution to the food and beverage formulations. The Lupin Protein Hydrolysate can be filtered and concentrated before spray drying to obtain the best clarity and purified product for these applications. Lupin Protein Hydrolysate is so particularly efficient where an low protein content is required in combination with a low level of hydrolysis to enhance molecular weight distribution for this application. As many Costantino products customization of this product is available for eventual fine tuning of the chemical properties to fit the customers optimal needs.

### SUGGESTED USE

Lupin protein is one of the most vegetal protein for nutraceutical applications in the near future. It can be used in different applications, thanks to its versatility and low allergens content. We recommend it for sauces, meat and use for its technical properties as smoothing and whipping agent. Generally usable in every formulation to replace nutritional content from animal origin.

### STORAGE & SHELF LIFE

Protein hydrolysates are hygroscopic and can absorb odors. Temperatures below 30°C, relative humidity below 65%, and odor free environment are recommended.

Avoid direct sunlight.

Expiry date: 2 years from the date of manufacture in the original sealed packaging kept in a dry area, ideally between 8 and 30°C.

### PACKAGING

The standard packaging is a 25 kg cardboard box which contains the product within an inner polyethylene liner bag. No staples or metallic fasteners are used:

- Custom packaging available.
- Delivered with Certificate of Analysis.

The information contained herein is based on internal testing performed at A.Costantino & C. S.p.A. and is to the best of our knowledge true and accurate at present time. All data represents typical analyses provided as a general guide and not to be taken for exact specifications. No warranty nor any liability, implied or otherwise, is assumed with them. Users are directed to perform their tests to determine suitability and performance for specific purposes.

The information and results contained in this technical data sheet are susceptible to modification at any time, without warning.

### TYPICAL PHYSICAL & CHEMICAL PROFILE

|                            |                           |
|----------------------------|---------------------------|
| Color                      | Creamy white to yellowish |
| Taste                      | Typical                   |
| Total Nitrogen on DM       | >6.4% w/w                 |
| Proteins on DM (TN x 6.25) | ≥40%                      |
| Ashes                      | ≤10%                      |
| pH (2% sol.)               | 4.0-6.0                   |
| Texture                    | Powder                    |

### AVAILABLE ON REQUEST

#### MICROBIOLOGICAL ANALYSIS

|                                      |                       |
|--------------------------------------|-----------------------|
| Total Bacterial Count                | <i>Salmonella</i> spp |
| Bile-tolerant Gram-negative Bacteria | <i>S.aureus</i>       |
| <i>E. coli</i>                       | Yeasts and Moulds     |

#### AMINOACID PROFILE

#### HYDROLYSIS PROFILE

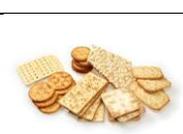
|                                |            |
|--------------------------------|------------|
| Molecular Weights distribution | Average MW |
| Degree of hydrolysis           |            |

#### OTHER ANALYSIS

|                 |            |
|-----------------|------------|
| Heavy Metals    | Allergens  |
| Carbohydrates   | Fat        |
| Salts and Ashes | Solubility |

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### Examples of Costantino Food and Beverage Product Applications (available)

| APPLICATION                            | PROTEINS USED                                   | FUNCTIONAL USE   | QUANTITY USED   | EXAMPLE   | CLAIM  |
|--|---|--|---|---|--|
| Chocolate Bar (Orange and Mint flavor) | Pea, Rice and Casein Hydrolyzed and whole blend | Increase Nutritional level<br>Increase Protein content for sport application | Add up to 25% to the original recipe to reach more than 30% of total protein level. |    | Vegan<br>High protein                        |
| Chocolate Candy                        | Pea, Rice and Casein Hydrolyzed                 | Diet pleasure support  | Add up to 15%   |    | Vegan<br>High Protein                        |
| Protein Bars                           | Pea, Rice and Hemp Hydrolyzed and whole blend   | Increase Nutritional level for sport nutrition                               | Add Up to 25% to reach more than 30% of total protein level.                        |    | Vegan<br>High Protein<br>Soft Texture        |
| Chocolate Cream                        | Casein Hydrolyzed                               | Whipping agent for Clean Label   | Replace monodiglycerides, dosage from 0,1-0,3%                                      |   | Clean Label<br>Improve spreadability/texture |
| Protein Pasta and noodles              | Pea and Rice Hydrolyzed and whole blend         | Sport nutrition pasta and noodles  | Add up to 35% to the original recipe  |  | Vegan<br>High Protein                        |
| Ice Cream                              | Casein Hydrolyzed, Rice Hydrolyzed              | Whipping agent for Clean Label Ice cream                                     | Replace monodiglycerides, dosage from 0,1-0,3%                                      |  | Clean Label<br>Improve overrun               |
| Diet Sachet                            | Pea, Rice and Casein Hydrolyzed blend           | Protein delivery   | 6 grams/sachet on total 8 grams sachet dose   |  | Vegan<br>High Protein                        |
| Meat and Ham based products            | Hydrolyzed pork collagen                        | Water retention and product slice ability, technical aerologic properties    | 5% of the total water added   |  | Clean Label<br>No added polyphosphates       |
| Crackers                               | Pea and Rice Hydrolyzed, Yeast hydrolyzed       | Add nutritional content, add Tiamine level for baby formulations             | Add up to 10% to the original recipe  |  | Vegan<br>Soft Texture<br>High Protein        |
| Soft and hard capsules and tablets     | Bovine, chicken and fish collagen hydrolysate   | Bones and joints nutrition, nutraceuticals                                   | % added to the recipe depending on the application                                  |  | High Protein                                 |

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### Examples of Costantino Food and Beverage Product Applications (under development)

| APPLICATION             | PROTEINS USED                                  | FUNCTIONAL USE                                       | QUANTITY USED  | EXAMPLE   | CLAIM                           |
|-------------------------|--|--|--|---|---------------------------------|
| Breakfast Cereals       | Pea and Rice Hydrolyzed and whole blend        | Add nutritional content                              | Add up to 8% to the original recipe                          |    | High Protein                    |
| Bread and Grissini      | Rice Hydrolyzed and whole blend                | High protein products for diet support               | Add Up to 25% to reach more than 30% of total protein level. |    | High Protein                    |
| Sport Drink             | Rice Hydrolyzed                                | Add nutritional content                              | Add up to 8% to the original recipe                          |    | High Protein                    |
| Biscuits and Cookies    | Pea protein hydrolyzed and whole blend         | Increase Nutritional level<br>Organic Label          | Add up to 8% to the original recipe                          |   | High Protein<br>Improve Texture |
| Vegetal Burgers         | Soy, Pea and Rice Hydrolyzed and whole blend   | Water retention, ad nutritional content, savory      | % added to the recipe depending on the application           |  | Vegan<br>High Protein           |
| Pizza dough             | Pea, Rice and Wheat Hydrolyzed and whole blend | Structure of the dough, crispy and softening effects | Add up to 5-8% to the original recipe                        |  | Improve texture                 |
| Vegetal and Vegan soups | Soy, Pea and Rice Hydrolyzed and whole blend   | Water retention, ad nutritional content, savory      | % added to the recipe depending on the application           |  | Vegan<br>High Protein           |
| Vegan Torraine          | Pea and Rice Hydrolyzed blend                  | Egg protein replacement for vegan market             | Add up to 3-5% to the original recipe                        |  | Vegan                           |