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Guayaquil-Ecuador

BIO-FORT HSP

PRODUCT DESCRIPTION

- **BIO-FORT HSP** is a powder concentrated product, with a content of low molecular weight bioactive peptides (<1000 Daltons) elaborated by enzymatic hydrolysis with controlled pH, time, and temperature, and subsequent *spray drying* of fresh byproducts of the Ecuadorian industry which processes shrimp for exportation.
- With the guarantee of Fortidex S.A., one of the main high biologic content marine protein producers in Ecuador.

INGREDIENTS

- Fresh byproducts from processing export aquaculture shrimp, with addition of preservatives.
- The process is accompanied with products encapsulating shrimp's typical odor and taste.
- It does not contain antibiotics or synthetic growth promoters.

FUNCTIONAL PROPERTIES

- **BIO-FORT HSP's** nutritional and functional strength is based on the high content of low molecular weight peptides (< 1000 Dalton), product of the controlled enzymatic hydrolysis.
- Benefits obtained from supplying peptides to aquaculture animals, especially shrimp, have been tested in assays and there is plenty of scientific information on them. Among the benefits we include:
 - *Immunomodulating effect*
 - *Antibacterial properties*
 - *Increases factor of resistance to clinical conditions from virus and bacteria attacks.*
 - *Antioxidant properties*
 - *Natural growth promoters.*
- Additionally, it complies with the attracting-palatability features of aquaculture food which, added to the high digestibility of the protein section, substantially improves food intake and FCR (Feed conversion ratio).
- Finally, **BIO-FORT HSP** has natural agglutinant properties with which high hydro-stability aquaculture products are achieved, thus there will be less losses from lixiviation of critical nutrients, such as vitamins and minerals.

SPECIFIC APPLICATIONS

- Its nutritional-functional profile is ideal for replacing, with a better cost-benefit ratio, special raw material such as squid meal, krill meal, and super prime fish meal.
- Recommended as an ingredient necessary in special diets such as in food for feeding introductory phases and/or for food designated for aquaculture systems in which stress caused by biological reasons must be prevented, such as in high presence of pathogens or water with a deficient quality.

USE RECOMMENDATIONS

- **Shrimps:** 0.6% to 1.5% range, but these values may vary in the diets of initial feeds where it can go up to 3%.
- **Omnivorous fish:** 1.5% to 3.0% range.
- **Carnivorous fish:** 1-2% range in fattening diets, which can go up to 5% in initial and reproductive diets.

TECHNICAL INFORMATION

PROXIMAL ANALYSIS		
PARAMETER	UNIT	GUARANTEED VALUE
Moisture	%	Max. 6.0
Protein	%	Min. 64.0
Fat	%	Max. 3.5
Ash	%	Max. 15.0
MINERALS		
Calcium	%	Min. 0.80
Total Phosphorus	%	Min. 0.27
Sodium	%	Min. 1.40
NaCl	%	Max. 3.70
PROTEIN QUALITY		
Protein Solubility	%	Min. 98.0
Digestibility (0,0002% pepsin)	%	Min. 95.0
AMINO ACIDS PROFILE (% of product, as it is)		
Aspartic acid	%	Min. 4.0
Glutamic acid	%	Min. 7.3
Alanine	%	Min. 4.0
Arginine	%	Min. 2.6
Cysteine	%	Min. 0.2
Phenylalanine	%	Min. 2.0
Glycine	%	Min. 4.0
Histidine	%	Min. 0.6
Isoleucine	%	Min. 2.0
Leucine	%	Min. 3.0
Lysine	%	Min. 3.5
Methionine	%	Min. 0.8
Proline	%	Min. 3.0
Serine	%	Min. 1.3
Taurine	%	Min. 1.3
Tyrosine	%	Min. 1.1
Threonine	%	Min. 1.7
Tryptophan	%	Min. 0.2
Valine	%	Min. 2.4
FUNCTIONAL NUTRIENTS		
Low molecular weight peptides ⁽¹⁾	%	Min. 92.0 of soluble protein Min. 58.0 of total product
Cholesterol	%	Min. 0.2
Phospholipid	%	Min. 2.0
Chitin	%	Min. 1.8
Total nucleotides	%	Min. 0.55
MICROBIOLOGICAL QUALITY		
Salmonella	CFU/gr	Absence/25 gr
Enterobacter	CFU/gr	Max.300.0
TVN	mg/100 g	Max. 300.0
FATTY ACIDS PROFILE (% of product, as it is)		
EPA	%	Min. 0.30
DHA	%	Min. 0.50
Total ω_3	%	Min. 1.10
Total ω_6	%	Min. 1.90

⁽¹⁾ Bioactive Peptides and Free Amino Acids, with a molecular weight less than 1000 Dalton.