



REGULATORY AFFAIRS COMMITTEE MEETING
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REGULATIONS ON PROTEIN ISOLATES

WHAT ARE PROTEINS AND WHAT DO THEY DO?

- Proteins are large, complex molecules that play many critical roles in the body.
- They do most of the work in cells and are required for the structure, function, and regulation of the body's tissues and organs.
- Protein: an energy-yielding nutrient composed of **carbon, hydrogen, oxygen, and nitrogen**.
- Differs from carbohydrates and fats because of the presence of **nitrogen**.
- The body has at least 30,000 types of protein, each with a different job.
- The **building blocks** of all protein molecules are **amino acids**.

PROTEIN IN THE BODY

- When you consume protein food, acids in the stomach start to denature the proteins.
- Once the proteins are broken down into their simplest form the amino acids are then carried in the blood stream to the parts of the body they are needed.

HOW MUCH PROTEIN DO YOU NEED?

- Protein is **not** stored in the body
- Quantity depends on:
 - Age
 - Gender
 - Body Size
 - State of Health
- RDA is 52 grams/day for 14-18 year old males, 46 g/day for females (as per EFSA)
- 0.85 grams of protein per kilogram of body weight
 - 1 kg = 2.2 pounds
 - 61.3 kg x 0.85 g = 52 g of protein
- As per Indian Council of Medical Research (ICMR) average adult requires 1.0 gram of body weight.

DIETARY SOURCES OF PROTEINS

- **Animal Sources of Protein**
- The largest **source of protein: Beef, Veal, Pork, Lamb, Poultry, & Fish.**
- Other: Eggs, Milk, Yogurt, and Cheese
- Fast food chains provide the bulk of protein in teens diets
- Meat is an excellent source of protein but can be high in fat, the same is true for dairy.
 - 57% of calories in ground beef come from **fat**
 - Mostly **saturated**, No **fiber**
- Considerably **more expensive**

DIETARY SOURCES OF PROTEINS

- Plant Sources of Protein
- Can be found in **grains, nuts, seeds, and legumes**
- Legumes capture **nitrogen** making them more protein dense: peanuts, yellow pea, black-eyed peas, kidney beans, black beans, lentils, chickpeas, and lima beans

VEGETABLE PROTEIN FOR FOOD PROCESSING

→ **Vegetable Protein**

- Vegetable protein are products produced by removing or partially removing non-protein constituents (water, fat, carbohydrates, etc.) from vegetable materials in order to achieve protein content of 40% or more.
- The main products are proteins come from legumes (e.g. soybean, pea, broad bean), cereals (e.g. wheat, corn, rice, oat), nuts and seeds (e.g. peanuts), tubers (e.g. potato) and other vegetables.

→ **Crude Vegetable Protein**

- Crude vegetable protein are products produced by primary extraction, in order to partially remove non-protein constituents (water, fat, and carbohydrates, etc.) from vegetable materials.

→ **Vegetable Protein Concentrate**

- Vegetable protein concentrate are products produced by extraction, concentration, separation, etc., in order to remove or partially remove non-protein constituents (water, fat, carbohydrates, etc.) from vegetable materials

VEGETABLE PROTEIN FOR FOOD PROCESSING

- **Vegetable Protein Isolate**
 - Vegetable protein isolate are products produced by extraction, concentration, isolation and refinement, etc., in order to remove or partially remove non-protein constituents (water, fat, carbohydrates, etc.) from vegetable materials.
- **Hydrolysed Vegetable Protein**
 - Hydrolysed vegetable protein are products produced by limited hydrolyzation of vegetable protein by enzymes. The major composition of Hydrolysed vegetable protein is protein.
- **Textured Vegetable Protein**
 - Textured vegetable protein are products produced by squeeze or spinning process of vegetable proteins, in order to obtain certain texture.

MAJOR INDUSTRIAL PROTEIN INGREDIENTS FROM PLANT SOURCES

<u>Plant source</u>	<u>Protein products</u>	<u>Protein content</u>
Soy	Soy protein concentrates (SPC)	65–70%
	Soy protein isolates (SPI)	>90%
	Texturised soy proteins	60%
Wheat	Vital wheat gluten (VWG)	75–80%
	Isolated wheat protein (IWP)	90%
	Texturised wheat proteins	
Rice	Enzyme hydrolysed protein	>90%
	Rice protein concentrate	~80%
Maize/corn	Rice protein isolate	90%
	Zein	88–96%
Peas	Pea protein concentrate	85
	Pea protein isolate	90%
Canola	Canola protein isolate	90%
	Hydrolysed protein	83%
Potato	Potato proteins	

Day, L. (2013) Proteins from land plants – Potential resources for human nutrition and food security, Trends in Food Science & Technology 32: 25-42.

INDIA FSSAI

→ Standards - 2.3.59: Vegetable Protein Products

Description

- (a) Vegetable Protein Products means the food products produced by the reduction or removal of the major non-protein constituents (water, oil, starch, other carbohydrates) from vegetable materials other than single cell protein sources in a manner to achieve protein content forty percent. or more.
- (b) It shall be prepared from clean, sound, plant material, free from foreign matter or from Vegetable Protein Products of lower protein content meeting the specifications contained in this standard
- (c) Carbohydrates including sugars, edible fats and oils covered under Food Safety and Standards (Food Products and Additives) Regulations, 2011, other protein products, vitamins and minerals, salt, herbs and spices may be added as optional ingredients.

INDIA FSSAI

→ **12.10 Protein products other than from soybeans**

- 12.10 Protein products other than from soybeans Includes cereal or legume or vegetable protein products such as wheat gluten, vegetable protein analogues, and proteinaceous meat or milk and fish substitutes.
- Includes their isolates, concentrates and hydrolystes, single cell protein including Spirulina.

→ **Protein Isolates**

- **2.4.11 MALTED AND MALT BASED FOODS**
- **2.7.1 Sugar boiled confectionery**
- **2.7.2 Lozenges**

FSSAI NUTRACEUTICALS

- **Food Safety and Standards (Health Supplements, Nutraceuticals, Food for Special Dietary Use, Food for Special Medical Purpose, Functional Food and Novel Food) Regulations, 2016**
 - Health Supplements – proteins
 - List of ingredients for nutraceuticals, Schedule VI
 - a) Edible legumes (seed powder), legume proteins (protein isolates/ concentrates/ hydrolysates)
 - b) Soya protein isolate/ edible legume seed protein isolate

SPORTS SUPPLEMENT

- The Ministry of Youth Affairs and Sports has notified following Generic Names of health supplements meant for sportspersons:
 - a) Whey protein
 - b) Soya protein
 - c) Sports drink including AAs, CHO, Protein and Electrolyte
 - d) Protein bars

FSSAI DRAFT REGULATIONS

- Food Safety and Standards (Foods for Infant Nutrition) Regulations, 2019.
- Milk cereal based complementary food means the food based on milk, cereals and /or legumes (pulses), millets, nuts and **protein concentrates/protein isolates** and/or defatted edible oilseed extracts and so prepared as to permit dilution with water or milk or other suitable medium.
 - Processed cereal based complementary food means food based on cereals and legumes (pulses), millets, nuts and **protein isolates/protein concentrates** or de-fatted edible oil seed extracts and so prepared as to permit dilution with water milk or other suitable medium. May contain vegetable protein

FSSAI DRAFT REGULATIONS

- **FOOD SAFETY AND STANDARDS (LABELLING AND DISPLAY) REGULATIONS, 2019**
- Nutritional Information per 100g or 100ml of the product and per serve percentage (%) contribution to RDA calculated on the basis of 2000 kcal energy, 67 g total fat, 22 g saturated fat, 2 g trans fat, 50 g added sugar and 2000 mg of sodium (5 g salt) requirement for average adult per day, shall be given on the label containing the following:
 - (i) energy value (kcal);
 - (ii) the amounts of
 - (A) Protein (g);
 - (B) Carbohydrate (g) and Sugars (g), added sugar (g);
 - (C) Total fat (g), saturated fat (g), trans fat (g) and cholesterol (mg);
 - Provided that the content of saturated fat and trans fat may be declared on the label as not more than (D) Sodium (mg);

FSSAI

→ Food Safety and Standards (Advertising and Claims) Regulations, 2018

- nutrition claim” means any representation which states, suggests or implies that a food has particular nutritional properties including but not limited to the energy value and to the content of protein, fat and carbohydrates, as well as the content of vitamins, minerals and other permitted listed nutrients and nutrition claims.

Protein	Source*	10% of RDA per 100 g for solids 5% of RDA per 100 ml for liquids or 5% of RDA per 100 kcal
	Rich / High *	20% of RDA per 100 g for solids 10% of RDA per 100 ml for liquids or 10% of RDA per 100 kcal



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THANK YOU