

Innovative Soy Protein Products to Meet Current Consumer Demand

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Agenda

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- Indian Food Industry
- Consumer trends
- Plant Based Protein Foods
- Why Soy Protein?
- Meat analogues
- Dairy analogues
- High Protein Low Glycemic Rice
- Immunity boosting products
- Summary

Indian Food Industry

- Indian food processing sector is the third largest in the world and is one of the country's largest industries
 - valued at 28 lakh crores
- India's Food Processing Industry contributes 13 to 14 per cent of the total GDP.
- By 2025, India's food processing industry is expected to be worth over half a trillion dollars (~73 Lakh crores).
- By 2030, Indian annual household consumption to be three-fold, making India 5th largest consumer.

Consumer trends

- There is dramatic increase in the demand for processed and convenience food in the global populations.
- Indian and global food industry is looking for healthy and sustainable food products such as
 - Plant protein-based products
 - Proteins for sustainability and health
 - Sustainable nutrition
 - Proactive health
 - Immunity
 - Digestive health

Plant Based Protein Foods

- There is dynamic shift in the consumer preferences to adapting more healthy and nutritional diet.
 - Focused towards less dependency on animal proteins and environmentally sustainable options
- Adoption of plant-based food & beverages among the consumers has been higher
 - Broader scope of product availability
 - Improved product developments
- Consumers in across the globe are looking for multiple health benefits from plant- based foods
- Consumers are willing to pay more for those that meet their needs



High/ More vitamins & minerals



High/ More calcium



High Fibre



Ingredients to promote digestive health



Added Omega 3 & 6



Added more protein

Why Soy Protein?

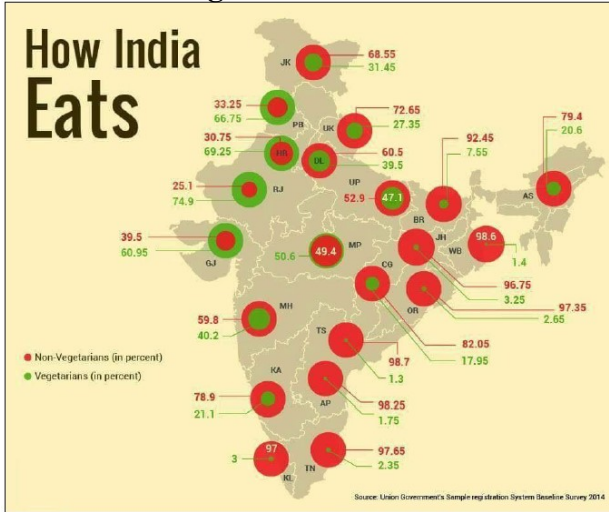
- Soy protein is an abundantly available plant protein with a great versatility.
- Soy protein has both health benefits and functional benefits in food systems
 - Based on these two factors soy and soy ingredients have immense potential in the food processing industry.
- Soy is a highly versatile that can be processed as food ingredients.
- Functionally active soy ingredients provide benefits in the food processing systems such as,
 - producing vegan/vegetarian products (dairy & meat analogs)
 - replacing expensive ingredients
 - improving process efficiencies, etc.
- Epidemiological data available across the world shows that soy is one of the safest and highly economical protein sources.
- Based on various characteristics of soy protein, it can be considered as the ideal protein for food systems.

How Does Soy Protein Fare With Other Sources?					
	Soy	Milk	Egg	Meat	Pea
Protein Density	✓			✓	
Protein Quality	✓	✓	✓	✓	
Supported by Health Claim	✓				
Bioactive Components	✓	✓			✓
Proven Health benefits	✓	✓			
Clean Label					✓
Safety	✓	✓	✓	✓	✓
Functional Properties	✓	✓	✓		
Economics	✓		✓		
Availability	✓	✓	✓	✓	
Score	9/10	6/10	5/10	4/10	3/10

Meat Analogues

- Meat analogues are one of the growing segments in plant-based protein products
- Consumer awareness of these plant-based meat substitutes is rising quickly due to their perceived health benefits
 - Prevention of non-communicable diseases, digestive disorders, and obesity.
 - COVID-19 has also fueled the rising popularity of these products because they are viewed as “immunity boosting.”
- This product category offers many flexitarians the ability to enjoy the taste of animal meat without consuming animal products.
- Indian Consumers Are Highly Receptive to Plant-Based Meat Substitutes
 - Indian consumers view plant-based meat substitutes as highly innovative, trendy, healthy and environmentally friendly.
 - Urban Indian consumers are increasingly open to the idea of consuming processed plant products as a rich source of protein.

Distribution of Vegetarians and Non-Vegetarians in India



Target Consumer Groups for Plant-Based Meat Substitutes

1. Vegetarians and flexitarians	1. Millennials and other young consumers	1. Urban, middle class consumers
1. Health conscious and ethical consumers	Protein deficient consumers	Non-vegetarians and "guilty" meat eaters

Dairy Analogues

- Consumers' interest
 - Increase interest in non-dairy products
 - Increasing vegan population
 - Environmental consciousness
 - Increasing health consciousness
- Lactose Intolerance
 - High incidence (40%)
 - Very high incidence of lactose malabsorption (27-70%)
- Excellent opportunities for lactose intolerant and health-conscious population
- Improved nutritional benefits
- Economic than dairy products

Dairy Analogues - Products

- Soy Ice Cream (Frozen Dessert)
- Soy Yogurt
- Soy Cheese Spread
- Traditional sweets
- Smoothies
- Cheese alternates
 - Can be made as mozzarella cheese from soymilk
 - Cheese single can be made using soy protein isolate
- SMP Replacer
 - Using soymilk powder
 - High PDI soy flour with whey powder can replace SMP



High Protein Low Glycemic Rice

- Rice kernel reconstructed from broken rice using extrusion technology
- Low glycemic index
 - Better management of glucose
 - Less medication to keep blood sugar in check
 - Lower insulin levels in the blood
- Fortified with Zn, Fe, Vitamin A
 - Zinc is one of the minerals essential for diabetics and can be added during extrusion
 - Similarly Fe, Vitamin A and other micronutrients can be easily added during extrusion
- Protein fortification
 - Diabetics needs more protein than normal people
 - Soy protein can be easily added to RCR
 - Reduces incidence of heart diseases and softer on kidneys



Soy and Immunity boosting

Soy is good source of various Immunoprotective components

- Protein
- Glycine
- Isoflavones
- Iron
- Selenium
- Zinc
- Fiber
- Vitamin E
- Omega -3
- Choline

Immunity Boosting Components in Soy Products

	Soybean	DFS	FFS	TVP	LFSF	ISP	SPC	Soy nuts	Soymilk	Tofu	Edamame
Protein (gm)	40	51.5	42	52	49.8	90	65	45	3.5	12	13
Fat (gm)	18	1.2	20	1	8.9	2	0.4	20	1.5	5	7
Iron (mg)	15.7	9.24	5.8	9.2	8.2	14.5	10.8	3.9	0.6	2	3.6
Zinc (mg)	4.89	2.46	3.6	2.46	4.1	4.03	4.4	4.8	0.1	1	1
Selenium (µg)	17.8	1.7	7.5	1.7	58.9	0.8	0.8	19.3	4.8	13	1.5
Glycine (gm)	1.52	1.957	1.6	1.957	1.8924	3.42	2.47	1.71	0.1	0.4	0.5
Vitamin C (mg)	6	0	0	0	0	0	0	0	0	0	29
Vitamin E (mg)	0.9	0.1	2	0.1	0.6	0	0	0.9	0.1	0.01	NA
Omega-3 (gm)	1.33	0.06	1.5	0.06	0.6	0.2	0.02	1.7	0.07	0.3	0.4
Choline (mg)	116	11.3	190	11.3	192	191	NA	124.3	26	33	56
Isoflavones (mg)	60-80	77-103	63-84	78-104	74-99.6	135-180	97-130	67-90	5.25-7	18-24	19.5-26

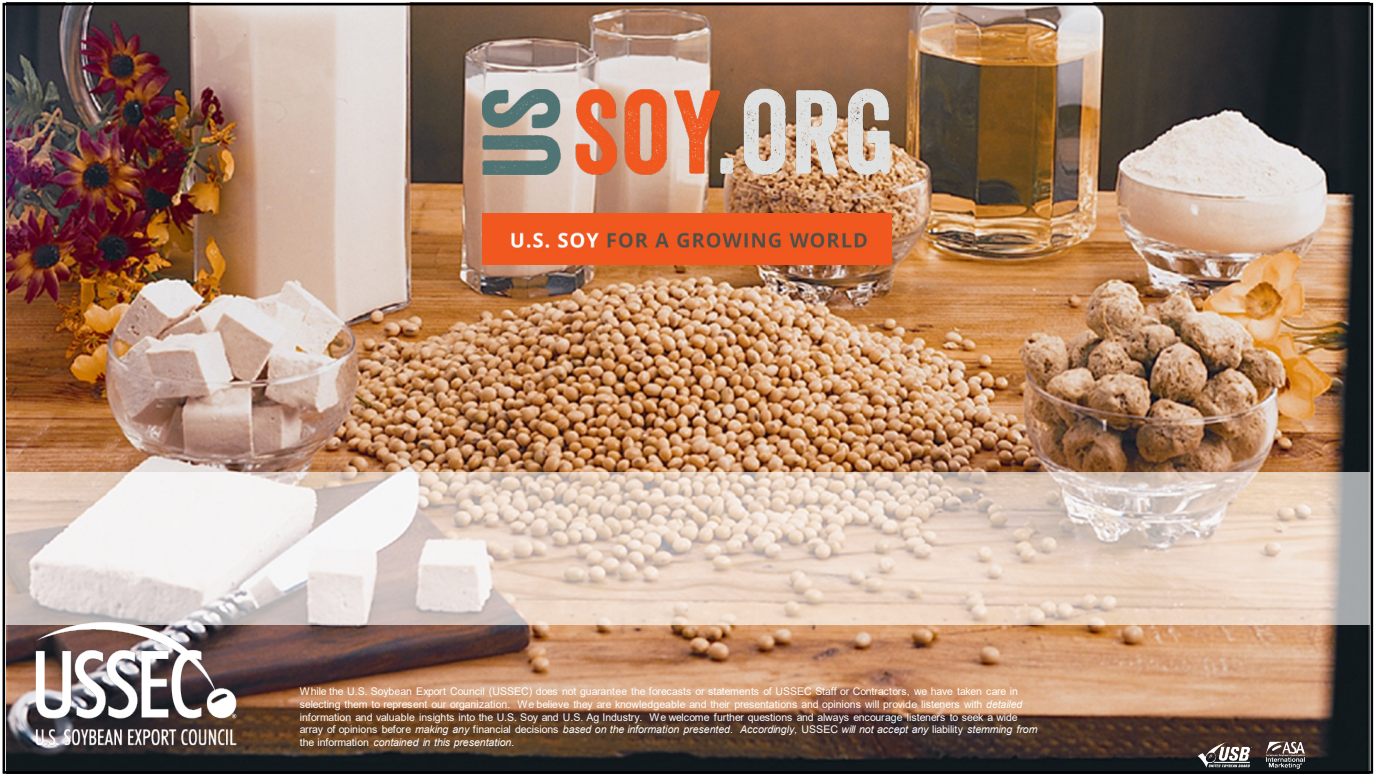
Source: USDA, Nutrient database

Role of Soy Foods in Immunity

- Good quality protein
 - Growth and development
 - Body cell mass maintenance and restoration
 - Immunity maintenance and restoration
 - Other body and organ functions
- Good source of immune boosting components
- Proven health benefits to support co-morbidity conditions
 - Heart health
 - Diabetes
 - Anti cancer

Summary

- Soy and soy ingredients offer excellent opportunities to the Indian food industry through various value-added products to meet the consumers demand.
- Unique soy protein with proven health benefits and functional benefits in the food systems will be an ingredient to produce these value added products.
- In the food ingredients, protein is considered to possess number of functional characteristics due to its structure.
- Soy is a highly versatile legume that can be processed into number of derivatives as food ingredients.
- The functionally active soy ingredients provide functional benefits in the food processing systems such as producing vegan/vegetarian products, replacing expensive ingredients, improving process efficiencies, etc.
- Based on various characteristics of soy protein, it can be considered as the ideal protein for food systems.



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