



Frozen Shrimp and Other Seafood-Based Value-Added Products

13

Abstract

Value addition refers to any kind of technique that added extra value of the products by means of employing processing methods, specialization of ingredients, addition of additives, enhancement of nutrition, attractive packaging technique, or other means. Value addition may be subjected to cutting, cooking, freezing, buttering, breading, marinating, and novel packaging. Shrimp marinated with vegetables, herbs, or other nutritional and/or medicinal ingredients are mostly demandable items in current world. Forms of consumption are different for different products. Some of them are ready to cook or bake or broil or fry/deep-fry or grill. Some of them are ready to thaw, ready to heat, ready to serve, ready to consume, etc. The world is moving very fast, and the demand of seafood is increasing day by day. Consumers now demand ready products which means the product should be easy to cook or ready to eat. Value addition is a type of process that helps consumers for ready meals. It also increases the price value of the products. The chapter highlights some value-added products of shrimp like tempura and torpedo shrimp, filo shrimp, marinated butterfly shrimp, shushi, value-added crab, and some other value-added fish products as well as other value-added seafood and shrimp byproducts.

Keywords

Tempura · Torpedo · Shushi · Crab · Byproducts

13.1 Introduction with Some Value-Added Products

HLSO, HLSO-Easy Peel, PND, PUD, PDT0, PTO, skewer, shushi, nobasi, butterfly, fan-tail round, grilled cut, leaf cut, torpedo (breaded), tempura (battered), filo, etc. are the different forms of value-added products. Variation of the above product

comes from employing a cutting, freezing, processing, and packaging technique. It also comes from the process of breading, buttering, and marinating. A variety of recipes (i.e., spring roll shrimp, cocktail shrimp, shrimp kabab, shrimp burger, shrimp soup, crusted shrimp, coconut breaded shrimp, buffalo shrimp, oriental breaded shrimp, popcorn shrimp, potato shrimp, etc.) are prepared from shrimp. Description of some value-added products is given below.

13.1.1 Tempura and Torpedo Shrimp

Tempura and torpedo are two forms of breaded and battered shrimp. Frozen peeled-deveined tail-on IQF shrimp enclosed in a crumbly, crispy film. It's a very popular snack for parties and celebration. There are two types of torpedo shrimp, i.e., torpedo shrimp (yellow panko) and torpedo shrimp (white panko), that are commonly observed.

Product description:	Raw frozen peel-deveined tail-on battered/breaded, IQF shrimp
General appearance:	Straight, coated thoroughly except tail fan and half of last segment
Packing:	20 × 500 g or 10 × 800 g or others as per specification
Ingredients:	Shrimp (STTP treated) and pre-dust Pre-dust includes: Modified starch, salt, shell calcium, vegetable oil, vegetable fat, emulsifier, rice powder, baking powder, soybean protein, wheat flour, modified starch, starch (corn), food color, batter mix, seasoning, spice extract, yellow/white panko (breaded crumb), sugar, east, emulsifier, or others as per specification
Defect:	Foreign materials, broken tail, broken body, excess spice, etc.
Shelf life:	2 years at –18 °C or below temperature

[Note: The difference between torpedo and tempura shrimp is nothing but battered and breaded.]

13.1.2 Filo Shrimp

Product name:	Filo shrimp
Product description:	Raw, IQF tail-on shrimp wrapped with filo pastry
Ingredients:	Shrimp and filo pastry Filo pastry includes: wheat, salt, sugar, flour, starch, pepper, stabilizer, palm oil, enhancer, gluten, etc. as per specification
Packing:	500 g or 800 g inner box or others as per buyer requirements
Defect:	Foreign materials, broken tail, broken body, excess spice, etc.
Shelf life:	2 years at –18 °C or below temperature

13.1.3 Marinated Butterfly Shrimp (Figs. 13.1, 13.2, and 13.3)

Product name:	Marinated butterfly shrimp
Product description:	Raw, IQF, HLSO butterfly marinated shrimp
Ingredients:	Marinated shrimp Shrimp marinated with vegetables/herbs/garlic/onion or others as per buyer specification
Defect:	Foreign materials, broken tail, broken body, excess spice, etc.
Shelf life:	2 years at -18°C or below temperature

Fig. 13.1 HLSO butterfly cut**Fig. 13.2** Marinated with herbs

Fig. 13.3 Final product (IQF)



Table 13.1 Packing of shushi

Size	Length (cm)	Pcs/tray or pcs/bag	Tray/MC
2 L	07.6–8	30 pcs/tray	20 tray/MC
3 L	8.1–8.5		
4 L	08.6–9		
5 L	9.1–9.5		
6 L	9.6–10		

13.1.4 Shushi (Table 13.1, Figs. 13.4, 13.5, 13.6, and 13.7)

Product name:	Shushi
Product description:	Cooked peeled deveined tail on split frozen shrimp
Ingredients:	Shrimp and STTP/NP/salt
Shelf life:	2 years at -18°C temperature
Defects:	Foreign materials, broken tail, broken body, excess spice, etc.

Except these a lot of variety of marinated and value-added and high-value products are available in market.

13.1.5 Value-Added Crab

Crab is another emerging potential resource of our seafood business. See the following details of value-added crab:

Forms of processing:	Crab, whole gutted, IQF Crab, whole, cooked, IQF Crab claws, cooked, IQF Breaded crab claws (Muslitos), etc.
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(continued)



Fig. 13.4 Sushi in Styrofoam tray packing

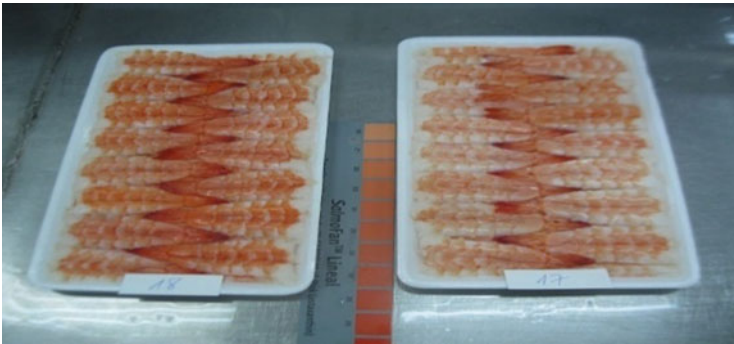


Fig. 13.5 Color measurement with SalmoFan



Fig. 13.6 Cutting process of shushi



Fig. 13.7 Length and weight measurement

Size/grade:	6/10, 11/15, 16/20, 21/25, 26/30, 31/40 Pcs/kg
Packing:	1 kg/box, 10 kg/carton, 12 boxes/carton etc. as per requirements

Muslitos: Muslitos is a breaded crab claw with real pincers, a value-added product of crab

13.2 Value-Added Fish and Fish Products

Value-added frozen shrimp has great demand in export commodity. It's a nutritious and delicious item. Different forms of delicious items are made from these fishes. Fish frozen, fish pickles, fish curry, fish fillets, fish loins/fish steaks, fish fingers, breaded fillets, fish cooked, fish powder, fish soup, etc. are the forms of fish products. Fish is also good for surimi preparation and imitation products. Freezing, drying, smoking, and salting are the forms of fish processing. Some of our factories are doing business by exporting fish but not at a satisfactory level. Initiatives should be taken as soon as possible to develop this business for both freshwater and marine fishes. The following are the scope of fish exportation:

Available species:	Bola, Ayr, Rui, Catla, <i>Kalibaus</i> , Rani, Puti, Mola, Taki, Shol, Gozar, Koi, Singh, <i>Tilapia</i> , <i>Pangus</i> , <i>Tengra</i> , <i>Bele</i> , <i>Batashi</i> , <i>Gulsha</i> , <i>Gutum</i> , Baim, Mullet, Hilsa, Seabream, Milkfish, Silver Pomfret, Mackerel, Grouper (Reef Cod), Snapper (White/Red), Sea Bass (Barramundi/Coral/Vetki), etc.
Product type:	<i>Frozen whole</i> gut-less, head-on/headless clean, boneless or bone-in, skin on/off, sliced/steaks, <i>fillet</i> , etc.
Size of fillet:	<i>Fillet size depends on size, type and species of fish and buyer's requirements. The following are the examples of fillet size:</i> 25–30 g, 40–60 g, 60–80 g, 80–100 g, 100–120 g, 120–150 g, 100–200 g, 200–300 g, 300–400 g, 400–500 g, 500–700 g, 700–1000 g, 1000–1200 g, 1200–1500 g, 1500 g, or above

13.3 Other Value-Added Seafood

The following are the examples of other seafood:

• Baby squid:	Whole, cleaned, raw, IQF
• Baby octopus:	Whole, cleaned, raw, IQF
• Baby cuttlefish:	Whole, cleaned, raw, IQF
• Crayfish:	Whole/peeled, cooked, IQF
• Clams:	Whole, raw/cooked, IQF
• Lobster:	Popsicle, whole, raw/cooked, IQF
• Mussels:	Shell on/half shell/mussel meat cooked, IQF
• Queen scallops:	Half shell, roe on, raw, IQF
• Surimi scallops:	Imitation/breaded
• Squid tubes:	Cooked/blanched/raw, IQF
• Squid rings:	Blanched/raw/battered/pre-fried/IQF

13.4 Shrimp Byproducts

Shrimp is usually processed to obtain export-grade flesh. Besides, processing industries discharged a large volume of shrimp (head, shell, mussel, intestine, etc.) as waste products. Around 35–50% products are considered as waste materials in shrimp processing industries. The waste percentage depends on the type of product. It will be very good if we can use this waste as raw materials for other products. Normally, the byproducts are considered as waste and usually transported to landfill. Some are used in fishmeal production with low economic value. Nowadays, the trend is changed; the value of these byproducts has been realized. Byproducts of shrimp are valuable. It can be used as raw materials for valuable products like shrimp waste contains several bioactive compounds such as chitin, pigments, amino acids, and fatty acids astaxanthin flavor compound, calcium carbonate, lipid, protein, etc. These bioactive compounds have a wide range of applications including medical; therapies; cosmetics; paper, pulp, and textile industries; biotechnology; and food applications (Mao et al. 2017).

The major components of shrimp waste are:

- Protein
- Chitin
- Chitosan
- Glucosamine
- Carotenoprotein
- Minerals

Chitosan is a valuable product, which has many economically attractive applications in food, agriculture, biotechnology, cosmetics, medicine, and waste

treatment (Trung 2008). If we can incorporate it in our regular business, I think it will be a great achievement that creates more opportunity and employment. The government should take initiatives to establish such types of industries in Bangladesh to utilize the byproducts.

References

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