

### Nuggets

Nuggets are another form of breaded and battered product. These are prepared from fish fillets. Fish fillets were washed and cut into square shape pieces of 2-3 cm size. It was then dipped in 1% salt solution for 10 minutes. The pieces were then drained, battered and breaded followed by flash frying for 30 seconds. Fried nuggets were stored in chill room. The product has shown a shelf life of 11 days in chilled storage.



### Fish pickle

Fish meat is cut in to small pieces and mixed with 3% salt and sun dried for two hours. The semidried meat pieces are then deep fried in gingelly oil and mixed with other fried ingredients. After cooling, sufficient quantity of vinegar is added, salt adjusted and kept at least for two days for proper mixing of ingredients and adjustment of pH. The pickle is then packed in airtight containers / stand-in pouches for consumer use.



Besides the above mentioned products, a variety of other value added items can be prepared from the species viz., ready to eat products like fish curry in retort pouches, canned products, frozen curry in tray packs etc. For products like cutlets and wafers, the meat attached to the filleting frames can be separated after cooking and can be utilised.



For the complete utilisation of the species, it is necessary to utilize the by products and wastes like skin, air bladder, bones, fins and viscera generated during processing. The technology for production of silage, feed etc, from the waste are available with CIFT

Among the culturable freshwater fish species, Pangasius has high potential to become one of most sought after species for value addition. However, the prospects for value addition and successful marketing of pangasius products depend on consumer acceptance, processing infrastructure and cold chain facilities for distribution.

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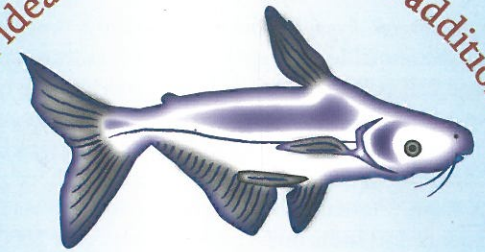
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# Pangasius

An ideal candidate for value addition



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## Pangasius - An ideal candidate for value addition



*Pangasianodon hypophthalmus*, commonly known as Pangasius or iridescent shark is widely cultured in the inland fish culture sector of India, particularly in the state of Andhra Pradesh and offers new scope for value addition. Frozen catfish fillets popularly known as "Basa" form the mainstay of export of fishery products from Vietnam to U.S and Europe. It was first introduced in India during 1995. In the year 2000, the species was introduced in Andhra Pradesh and at present about 32,000ha is under Pangasius culture mainly in the districts of Krishna, West Godavari, East Godavari, Guntur and Nellore. Pangasius has a remarkable growth rate (almost one Kg in 90 days) which makes it a preferred candidate for culture. The annual production of Pangasius cultured in Andhra Pradesh increased phenomenally and reached 5,40,000 tonnes in 2010.

Pangasius meat has high nutritional qualities and excellent sensory properties. The fish can easily be filleted due to the absence of intramuscular pin bones.

### Proximate Composition of Pangasius Meat

- Moisture : 78%
- Protein : 18%
- Fat : 2%
- Ash : 2%

Pangasius fillets are preferred choice for a wide range of products due to:

- Tender flesh
- Sweet taste
- Absence of fishy odour
- No spines
- No small bones
- No skin
- Delicate flavour
- Firm texture when cooked

With a view to promote the avenues for value addition of Pangasius, the Central Institute of Fisheries Technology (ICAR) has carried out detailed studies on the post harvest aspects of this species. The studies included development of value added products, quality assessment and shelf life evaluation.

### Post-harvest handling

The shelf life of Pangasius is influenced by preservation and handling practices. To reduce the bacterial spoilage, fish should be washed and iced immediately after harvesting. The bigger sized samples (5Kg up) contain significant quantity of subcutaneous fat and high collagen content in the meat. Medium sized specimens (2Kg) are found to be suitable for product development. For better preservation, the fish should be gutted; gills removed, washed thoroughly and packed in ice. It has been observed that bleeding the fish immediately after the catch significantly improved the quality and colour of meat. The yield at different stages of processing of Pangasius is given below.

Stages of processing	Yield
Gutting	76%
Steaks	37%
Filleting ( Skin on)	28-32%
Mince	22%

## Value added products from Pangasius

### Gutted fish

Shelf life of the fish can be extended by gutting and evisceration. Care has to be taken to avoid cut or bruises on the surface of fish during handling. Studies conducted at CIFT have shown that gutted fish remained in acceptable condition up to 24 days in ice. Sensory evaluation revealed that gutted fish retained high quality compared to whole fish at the same conditions of storage.

### Steaks and Fillets

The most common form of ready to cook product of fish is steaks and fillets. The whole fish has to be gutted and the gutted fish can be cut into steaks of 1-2 cm thickness. Fillets are prepared as skin on and skinless from the whole fish. Studies carried out in CIFT have shown that Pangasius steaks had a shelf life of 14 – 17 days in chilled conditions.

### Smoked portions

The whole fish was filleted and cut into pieces which were then cold blanched in 10% brine followed by 2% w/w turmeric for 15 minutes each. It was then hot smoked at 60° C for two hrs. Chilled storage studies showed that the product had a shelf life of 4 weeks.

### Fish fingers

Fish fingers from pangasius are prepared from the skinless fillets / portions of meat. The meat cut in the size of 8 X 2 X ¾ cm are cold blanched in 2% salt solution for 10 minutes, drained and coated with batter and breadcrumbs. The coated fingers are then flash fried for 30 seconds and stored in frozen condition.

### Fish Balls

Battered and breaded fish balls were prepared using fish mince from pangasius. Fish mince was thoroughly mixed with salt, corn starch and spices. Then it was made into balls of 2-3 cm in diameter and cooked in boiling water for 5-10 minutes. The cooked balls after cooling were battered and then breaded. After flash frying in hot oil, the balls were kept in chill store. Biochemical and sensory evaluation had shown that the fish balls were acceptable up to 15 days in chilled storage below 4° C.