

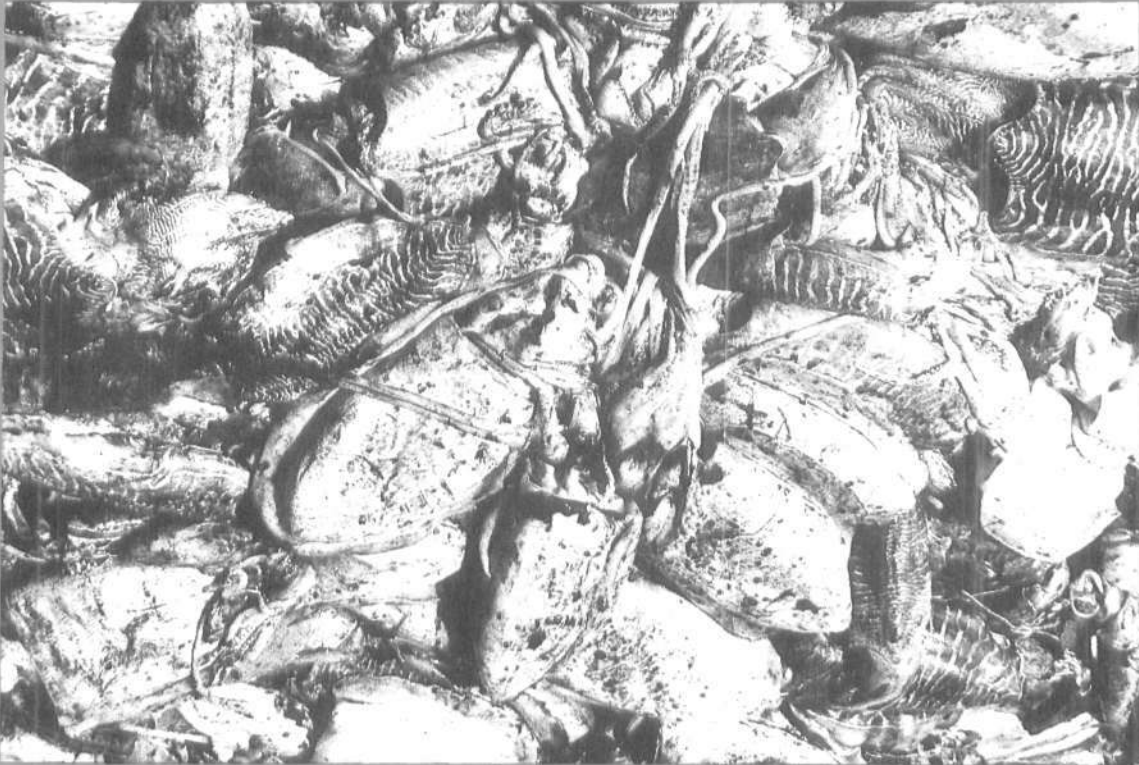


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UTILISATION OF PASTE SHRIMP ACETES : A REVIEW*

The use of plankton and micronectonic organisms as a source of food has been advocated by many scientists since long time. The commercial exploitation of Antarctic 'Krill' by some of the industrialised nations during the past decade also aims to meet the demands of the increasing world population. However, the exploitation of Krill is highly capital intensive and requires immediate onboard processing for reasons of quick spoilage and want of land based facilities far in the Antarctic Ocean. The epiplanktonic sergestid shrimps of the genus *Acetes* are quite comparable to the Krill as far as their shoals and sizes are concerned. The *Acetes* group of shrimps occur in great abundance and are exploited far more economically than Krill by the traditionally operated gears in coastal waters of India, China, Japan and almost the whole of southeast Asia and in some of the South American and African countries.

In India, annually about sixty thousand tonnes of non-penaeid prawns are landed of which nearly 75-80% catch is comprised of *Acetes* spp. There are five species of *Acetes* occurring all along the coast line of India but only one of them, namely *Acetes indicus* forms a fishery of great importance. Almost the entire catch of *A. indicus*, to the order of 35-50 thousand tonnes is landed along the north west coast of India in the states of Maharashtra and Gujarat.

The species of *Acetes* are typical epipelagic shrimps and they prefer a highly neritic environment influenced by a considerable discharge of fresh water from land. They also prefer muddy bottoms associated with extensive shallow water areas with strong tidal currents and sheltered from the open seas. They commonly inhabit bays and inlets including estuaries and brackish waters. They inhabit water shallower than 50 m deep and

migrate diurnally upwards at night and downwards during the day. They have a strong tendency to aggregate, especially at night in the surface layer of the sea, forming very large shoals which generally result in uniform catch of a single species. They grow to about 15-20 mm body length within a few months and die off soon after spawning with a life span of 3-10 months. *A. indicus* grows to about 25-40 mm size and has a lifespan of 4-6 months.

The species of *Acetes* are one of the most important forage organisms for the coastal fishes. Majority of fishes whether bottom feeders, zooplankton feeders or phytoplankton feeders pass through a stage in their development when they use planktonic crustaceans as their food. In Bombay waters it was found that not only pelagic and demersal fishes but also cephalopods and majority of prawns feed on *Acetes* and other non-penaeid prawns.

In Maharashtra and Gujarat states where major landing of *Acetes* takes place (locally called Jawla in Marathi), the catches are brought ashore in not so fresh condition or in decomposed paste form. Therefore the species of *Acetes* are also known as 'Paste shrimp'. Very little quantity (less than 5%) of *A. indicus* is utilised for fresh consumption. The fresh *Acetes* is boiled with dry chilli powder, turmeric and tamarind pulp to be taken with rice or bread. The fresh *Acetes* is also used for making 'bhajeeya' in which the *Acetes* pulp is mixed with onion and bengal gram flour and fried in oil. Most of the catch of *Acetes* is sundried and only freshly dried material is used as dryshrimp, called 'sookat' which is used for making curry, chutney or simply roasted and taken with rice or bread. The decomposed dried *Acetes* is used as poultry feed and some times reduced to fish meal along with other trash fish.

Utilisation in other countries

In most of the Asian countries, as in India, only a small proportion of the catch is marketed as fresh shrimp; the greater proportion is dried. In south-east Asian countries the catch is sundried, boiled, dried after boiling and sometimes processed further by having the carapace removed from each shrimp, pickled, salted or fermented with salt in various ways for food. The shrimp paste and sauce are manufactured extensively throughout southeast Asia and are esteemed for their taste and nourishment.

Acetes chinensis is one of the most important marine resources in China. The catch in the Gulf of Po Hai is tremendous, amounting to 60,000 to 70,000 tonnes a year for this species alone. A product made from the shrimp paste is called 'Xiajiang' in China, 'Mam-tep' in Vietnam, 'Blachan' in Malaysia and Singapore, 'Gapi' in Thailand and 'Ngapi' in Burma. In this preparation, fresh '*Acetes*' is mixed with salt and dried in the sun for 5-8 hours. It is then put through a mincer and packed tightly in a wooden tub which is covered with burlop and set aside for a week to cure. The paste is then removed from the tub and again spread out to dry in the sun. This is followed by a second mincing and again the paste is packed into the tub, covered and allowed to cure for about a month. The process of fermentation, mincing and drying is repeated at least three times and finally the product is pressed into a hard mass. Blachan is deep purple in colour and has a strong shrimp flavour. This product remains in good condition for two months or more. The 'blachan' contains 27% water and nearly 36% protein. For 1 kg of 'blachan' nearly 3.7 kg of fresh *Acetes* is required. The taste and nutritional value of Blachan is highly favoured by people of south east Asia and considerable amount (4,000-5,000 tonnes) is exported from Malaysia to Singapore and Thailand.

The shrimp sauce called 'Xiyau' in China and 'Nam-pla' or 'Nam-kow' in Thailand is made from the supernatant fluid which is drained or skimmed from the semi cured shrimp-paste. In Malaysia there is another product called, 'Chinchalok' in which the shrimp is pickled whole in salt and fermented with cooked rice.

In Thailand a product called 'Gapi' or 'Kappi' is used as an important condiment. It is made from *Acetes* and mysids in which fresh shrimp is mixed with salt and allowed to drain overnight. The material is dried in the sun for 5-8 hours, ground and again dried. It is packed in wooden tubs and fermented for 15-120 days.

In Japan *A. japonicus* is the major species (locally called 'aktami') with annual landings of 1,000-2,000 tonnes. In Japan a product called 'amizuke' is made in which fresh *Acetes* is pickled whole in salt and fermented.

Many species of *Acetes* are also caught in North Korea, Philippines, Bangla Desh, Sri Lanka, Kenya, Tanzania, Senegal, Mozambique, Madagascar, Surinam and in French Guiana where mostly they are consumed in dried form.

Recently a few attempts have been made in India and elsewhere to develop different products such as isolated protein powder and value based products such as flakes, soup powder, Chitosan, sauce and 'Kropuk udhang'.

Besides their use for human consumption, *Acetes* spp. are being recently used as food for the penaeid prawns in aquaculture practices. A tissue suspension technique uses fine suspension of *Acetes* for feeding different larval stages in the hatchery which is claimed to be much cheaper than the algal suspension and artemia culture practised in most of the hatchery systems. Feeding of whole, fresh *Acetes* as supplementary feed for the eye-stalk ablated prawns is also supposed to promote growth.

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