

Belacan

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Abstract

Belacan or shrimp paste, is a fermented food made from shrimp (Acetes species). It is a popular product widely consumed as an ingredient in dishes and as condiments among the Malays in Brunei and also in other parts of South East Asia. The process of making belacan involves protein autolyses and fermentation by lactic acid bacteria. Belacan has a high protein and salt content.

Introduction

Almost every home in Brunei will have in their kitchen some 'belacan'. It is a popular and widely accepted fermented fish product in Brunei and also in other parts of Borneo. It is an important ingredient in Bruneian cuisine. *Belacan* can be considered as the *camembert* cheese of the East.

Belacan has been described as a pungent, salty paste with a strong shrimp flavour. If a jar of *belacan* is left open for a few minutes, the strong aroma will permeates the air immediately and will stay for sometimes, especially the smell of roasted *belacan*. For those who love the aroma, it will stimulate their appetite. But for those who cannot stand the smell will quickly take out the air freshner.

Belacan is a fermented product, made from fermenting *Acetes* species or *bubok* (the Bruneian word for tiny shrimps). A food is said to be fermented when microbial activity in a food alters its characteristics and at the same time imparting a certain flavour and aroma. This is due to the action of the microorganisms excreting flavour compounds and also chemically altering constituents of the raw material to produce new or additional compounds. The activities can be carried out by one group of microorganism such as the fermentation of *tempe* (a fermented soybean product) by *Rhizopus*, a mould species, or by a number of different groups of microorganisms for example as in *belacan* where *Bacillus* species and lactic acid bacteria are involved.

Consumption

The *sambal belacan* is the usual condiment normally presented as dip to traditional Malay salad. Fresh red chilli, a little bit of shallots and a small amount of roasted *belacan* are pounded together in a traditional granite mortar. Some lime juice is added to compliment the hot and fishy taste of the *sambal*, for those who wants to counteract the hotness of the chilli will add a little bit of sugar.

Fish pastes and sauces are used as condiments and seasonings to brighten monotonous rice dishes. Because of its high salt content, no one eats a great daily volume of these products, but almost everyone consumes a little bit every day.

Similar products are also found in other parts of South-East Asia in particular Indonesia, Thailand and Malaysia, Burma. It is also known under a different name and some use fish as the raw material.

Production of *Belacan* in Brunei

In Brunei, *belacan* is usually made on a cottage industry. Basically this product comes from the water village and the coastal area, where traditionally the villagers were mostly fishermen. Their catch of tiny shrimps would have been wasted since in the old days no refrigeration was available, in order to avoid wastage, the shrimp were either dried under the sun or fermented and made into *belacan*. The shrimp are picked off the foreign matter and washed in a few washings of water to get rid of any sand and other unwanted material. It is then mixed with about 15-20 % of coarse sea salt and kept in a plastic *guni*' (a plastic sack used for packing fragrant Thai rice). The mixture is then allowed to ferment at room temperature usually around 30-32 °C overnight. The mixture is then spread on a bamboo *nyiru* and dried under the sun for a couple of hours just enough time to get rid of most of the water. Surface contaminating bacteria are reduced in number at this stage. The shrimp and salt mixture are then pounded using the traditional wooden *lesong* but nowadays an electric blender is used. However some makers avoid using the electric blender as from their opinion the *belacan* will not have a good shelf life. The reasons could be that the necessary microorganisms died due to the heat produced during blending. The mixture is pounded until a cohesive pasty material is obtained. The use of dry *bubok* is not popular, as it will not give the give the pasty and cohesive mixture, to make a good *belacan*.

Once the required consistency is obtained the paste is packed in a clay jar or *pasu* or a plastic container with an airtight lid can also be used. The paste must be tightly packed in the container and the surface covered with a few layers of kitchen paper. To create anaerobic condition, the container is covered with the lid and inverted. The kitchen paper will absorb any excess liquid. After a few days, the kitchen paper can then be taken off and replaced with a new layer of kitchen paper. This step in the processing of *belacan* is important as it reduces the moisture content of the paste. The reduced moisture content, combined with the high percentage of salt in the paste, prevent spoilage and food poisoning microorganisms from proliferating. The *belacan* is then allowed to ferment for two months or longer before consumption. The longer the *belacan* is allowed to ferment, the stronger the flavour and aroma.

For marketing, the *belacan* is made into balls with price ranging from \$2.00 - \$10.00, according to sizes. Some makers packed their *belacan* in rectangular log with varying size. Most of those *belacan* sold in the *tamu* or wet market in Brunei are wrapped in polythene bags and secured with rubber bands. Some products from outside Brunei, are often packed in *nipah* leaves. Some differences are found in the steps of processing *belacan* when we compare with Malaysia and other parts of South East Asia.

The Science of *Belacan*

Growth of the necessary microorganisms occurs during the overnight fermentation. The presence of salt in the mixture makes it selective for salt-tolerant bacteria such as *Micrococcus*, *Staphylococcus*, *Bacillus* and *Pediococcus* (Campbell-Platt, 1987). The role of microorganisms in the fermentation process is clearly different from that in fermented vegetable products. The

high salt content of this product leaves only salt-tolerant microorganisms to survive. These microorganisms originated from the natural microbial population of the shrimp itself and from the salt and microorganisms during the manufacturing process from fermentation container, equipment and maker. Protein breakdown resulted from combination of the autolytic action of the natural shrimp enzymes and the effect of microbial fermentation. Protein is broken-down into peptides and amino acids, then eventually to amines and ammonia. The groups of bacteria involved comprised of *Bacillus* species, which have been known to be responsible for the production of volatile, which give rise to the characteristic strong aroma and flavour of *belacan*. Other bacterial groups include the lactic acid bacteria, which produce lactic acids. Besides the enzymatic action of these bacteria in the breakdown of the shrimp protein to more digestible amino acids, the combination of the volatiles and acid produced, result in a highly strong fishy smelling and a much appreciated flavour made *belacan* a popular, well accepted delicatessen in the Bruneian cuisine.

The Food composition of *Belacan*

During the fermentation, some proteolysis occurs due to autolytic shrimp enzymes and activities of the fermenting bacteria. The protein (including amino nitrogen) content of *belacan* per 100g dry matter (DM): 48g. Crude fibre is about 5g, water 30g, fat 1.3g, ash 22g and sodium chloride 13-25g (Abu Bakar, 1998). There are also small amounts of vitamins such as riboflavin, niacin and traces of thiamine (Campbell-Platt, 1987).

Although *belacan* is considered as a 'smelly' food, its popularity is unwavering in the Bruneian society. *Belacan* is a good source of proteins and amino acids, but the high salt means that intake has to be limited. It is a fermented product, which has a good shelf life and will always have a special place in the Bruneian diet.

References

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