

NOTE

Pickled Product from a Gastropod, *Babylonia spirata*

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The gastropod, *Babylonia spirata* meat was softened by cooking under pressure and pickle was prepared using standard recipe and methodology. The shelf life was assessed by chemical, microbial and organoleptic characters during the storage period of 150 days. The pickle did not show any specific signs of spoilage.

Key words : Gastropod, pickle, heterotrophic bacteria.

The marine molluscs form an important part of fishery next to crustaceans in terms of commercial value. The meat of gastropods is delicious and constitutes a good source of protein, glycogen and minerals, on par with other animal foods (Durve & Bal, 1961, Giese, 1966, Ansari *et al.*, 1981). *Babylonia spirata* is one of the commercially important gastropods and has been an important source of seafood in Indo-Pacific region for many years (Ayyakkannu, 1994). In India, however *B. spirata* is not a familiar seafood and is consumed only by certain fishing population. Till today, no work has been done to utilize this gastropod properly. Production of pickled products appears to be the best initial method of utilisation of this gastropod. Pickled products are considered a delicacy and have a long shelf life (Chandrasekhar *et al.*, 1978; Chandrasekhar, 1979). A number of molluscan species such as clams (Vijayan *et al.*, 1982), green mussel (Muraleedharan *et al.*, 1982), blood clams (Gupta & Basu,

1985) and the gastropod, *Chicoreus ramosus* (Patterson *et al.*, 1995) have been used for the preparation of pickles. In the present study, pickled product prepared out of the gastropod, *Babylonia spirata* meat and its storage life is reported.

The gastropod, *B. spirata* collected from Annappanpettai (lat. 11° 29' N; long 79° 46' E) on the southeastern coast of India was brought to the laboratory in live condition. The shells of the gastropod were broken and the soft tissues were separated. The edible portions such as foot and adductor muscles were separated and washed in potable water and boiled for 10 min to remove the mucus. The mucus removed meat was again washed thoroughly and softened by cooking in a pressure cooker at 15 lbs/square inch pressure for 1 h. The softened meat was used for the preparation of pickle using a standard recipe (Table 1) and following methodology developed by the authors.

Table 1. Standard recipe for *B. spirata* pickle

Ingredients	Quantity, g
<i>B. spirata</i> meat (Cooked)	500
Garlic	250
Ginger	100
Chilli powder	50
Corinder powder	50
Mustard seeds	10
Turmeric powder	5
Asafoetida powder	10
Salt powder	40
Vinegar	100 ml
Gingelly oil	300 ml

The softened meat was thoroughly mixed in a mixture of 2 g of turmeric powder, 10 g of salt and 20 g of chilli powder and kept for 30 min. Then the meat was fried in gingelly oil until golden brown and cooled. Mustard seed was fried in gingelly oil and all the other ingredients were gently heated. The fried meat was added and stirred thoroughly for about 10 min. Vinegar was added to the meat mixture and mixed well by stirring. The gastropod pickle was cooled and packed in sterilized air tight glass bottles and stored at ambient temperature ($30 \pm 2^\circ\text{C}$).

The quality of the pickle was assessed monthly by examining the microbiological and organoleptic characteristics up to five months. Total heterophilic bacteria was enumerated by employing standard pour plate technique using Zobell's 2216E Marine Agar. Serial dilution of the samples were prepared using sterile 50% sea water and 1 ml of the diluted sample was pour plated in Zobell's Agar in triplicate. Inoculated plates were incubated for 48 h at room temperature (27°C).

The organoleptic characters like colour, taste, texture, odour and overall acceptability of the pickle was evaluated on a scale of 10 with 4 being the score for acceptability. The samples along with questionnaire are given to 10 panelists at monthly intervals for assessment.

The mean panel scores for all the organoleptic characteristics are given in Table 2. The initial colour of the pickle was pale red and the flavour was similar to that of traditionally prepared pickle from seafood. No remarkable changes were observed in colour and flavour during the storage period. The texture of the pickled meat was tough but with ageing became softer. Similar results have also been observed in clam meat pickle prepared by Vijayan *et al.* (1982) and Gupta & Basu (1985).

Table 2. Organoleptic characteristics of *B. spirata* pickle during storage period.

Storage days	Colour	Taste	Texture	Odour	Overall acceptability
0	8.0	7.5	6.0	7.5	6.9
30	8.2	7.6	6.9	7.5	7.5
60	8.1	8.2	7.3	7.5	7.5
90	8.1	8.2	7.3	7.8	8.3
120	8.2	8.5	7.8	7.8	8.3
150	8.2	8.5	7.8	7.8	8.3

The changes in the total heterotrophic bacterial (THB) count of the pickle is given in Table 3. Fairly high numbers of bacteria were recorded initially (2.862×10^3 CFU/g) which could be attributed to secondary contamination after cooking. The bacterial load of the pickles decreased with ageing and after 150 days, it was only 0.515×10^3 CFU/g. The bacterial load was lower

Table 3. Microbiological characteristics of the pickle during storage

Storage days	THB (X 10 ³ CFU/g)
0	2.862
30	2.291
60	1.801
90	0.788
120	0.568
150	0.615

than that of commercial prawn pickle (Abraham & Jayachandran, 1993). No mould growth was observed throughout the storage period. Jarvis (1950) and Stansby (1963) reported that spices are light preservatives and retard bacterial spoilage. Subba Rao *et al.* (1963) reported that an emulsion containing acetic acid, mustard and turmeric powder is a preservative and has controlling effects on growth of yeast and moulds. Vijayan *et al.* (1982) stated that the mould growth in pickled products could be arrested by the use of skinned mustard and gingelly oil. In addition to that, garlic and ginger also reduce the growth rate of *Staphylococcus aureus* (Nkanga & Uraih, 1981, Kumar & Gupta, 1984). In the present study also mustard, turmeric powder, garlic and gingelly were used for the preparation of the pickle and this may have a role in arresting the growth of bacteria, yeast and moulds. In addition to that, the cooking of meat under pressure also destroys the microbes. The *B. spirata* meat pickle was found bacteriologically and organoleptically safe and did not exhibit any visible signs of spoilage even after 150 days of storage.

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