

Processing Chank Meat (*Xancus pyrum*) into Pickles

K. Dhanapal, K. Rathnakumar, G. Indra Jasmine and
P. Jeyachandran

Department of Fish Processing Technology
Fisheries College and Research Institute
Tuticorin - 628 008, India

Methods have been worked out for the production of pickles from Chank (*Xancus pyrum*) meat. The pickle was subjected to biochemical, bacteriological and organoleptic tests at different intervals of storage. The chank meat pickles packed in glass bottles and sealed air tight remained in good condition for six months at ambient temperature.

Common or sacred chank (*Xancus pyrum*) is fished mainly for its shells which are used for making ornaments. The peak season for the fishery is from March-June and September-November (MPEDA, 1985). Chank meat is normally consumed in the form of dried chips that are fried in gingelly oil (Hornell, 1917). The chank meat is highly nutritive. It has high content of protein (24.8%), minerals (Na, Fe, Cu, Mg) and low content of fat (Venkataraman & Chari, 1953). Commercial utility of chank meat is not exploited due to the unawareness of proper processing techniques in the local population. Hence this study on pickling of chank meat was taken up and its storage life is reported.

The fresh chank meat collected by the chank divers of Tuticorin were purchased and kept overnight in ice to remove the mucus and black colouration of meat completely. After repeated washing and brushing with nylon webbing, meat was blanched for 30 min in 3% boiling salt solution. Then it was drained and chilled by ice for 10 min and cut into small pieces. These pieces were spread over a nylon mesh for 30 min in shade for drying. The dried meat were shallow fat fried using refined oil and kept aside after draining the

oil. The pickle was prepared as per the method of Abraham & Jeyachandran (1993). Composition of the ingredients are given in Table 1. Pickle thus prepared was kept aside over night, packed in cleaned and sterilised glass bottles and sealed. Before sealing care was taken to prevent the exposure of meat and exclude the growth of aerobic moulds and yeasts for which a layer of oil was ensured at the top to cover the solids. The pickled meat samples were periodically tested for pH, titratable acidity, microbiological and organoleptic quality. The pH was directly recorded using a Toshniwal combined electrode pH meter. Titratable acidity was determined as per AOAC (1975). Total plate count, mould count, *Staphylococcus aureus*, vibrios, coliforms, salmonella and streptococci were analysed according to the standard methods recommended by APHA (1976). Sensory attributes such as appearance, colour, taste, texture, odour and overall acceptability were evaluated by a panel of twelve judges on the basis of a 9 point hedonic scale.

The results of biochemical and microbiological changes of chank meat pickle during storage are presented in Table 2. Titratable acidity showed an increasing

Table 1. Composition of ingredients for the preparation of chank meat pickle

Chank meat	1000 g
Ginger	100 g
Garlic	100 g
Green chilli	70 g
Cumin seed	25 g
Mustard seed	25 g
Asafoetida	15 g
Fenugreek	10 g
Chilli powder	70 g
Turmeric powder	10 g
Curry masala	10 g
Common salt	100 g
Refined oil	400 g
Curry leaves	10 g
Vinegar	300 g
Citric acid	5 g
Sodium benzoate	5 g

trend from the initial value of 0.40 to 0.99 acetic acid at the end of 180 days, whereas pH registered a decreasing trend from 5.03 to 4.56. This may be due to uptake of acid by the meat during storage. Total plate count was found to decrease from 3.1×10^3 g⁻¹ to 1.2×10^1 g⁻¹. Coagulase positive *Staphylococcus aureus* present in the initial period of storage was subsequently absent throughout the study period. Similarly other pathogens like vibrios, coliforms, salmonella, streptococci and mould were absent. These organisms are reported to be inhibited in pickles with high salt and low

pH (Abraham & Jeyachandran, 1993). The absence of mould growth in the pickle may be due to the maintenance of anaerobic condition. Similar observations were reported by Vijayan *et al.* (1982) and Muraleedharan *et al.* (1982).

The mean panel scores for the sensory attributes such as appearance, colour, taste, texture, odour and overall acceptability are presented in Table 3. During the initial stage of storage the meat was found to be tough but after a month the texture became soft with increased flavour. Similar results have also been observed by many workers (Gupta & Basu, 1985; Vijayan *et al.*, 1982). The chank meat pickle was found bacteriologically and organoleptically safe and good for over 180 days.

Table 2. Biochemical and microbiological changes of chank meat pickle during storage

Storage period, days	Titrateable acidity (as % acetic acid)	pH	TPC g ⁻¹	<i>Staphylococcus aureus</i> , No. g ⁻¹
0	0.40	5.03	3.1×10^3	1.5×10^2
30	0.49	4.96	2.9×10^2	ND
60	0.69	4.88	2.3×10^2	ND
90	0.79	4.84	2.2×10^2	ND
120	0.83	4.68	2.8×10^1	ND
150	0.90	4.61	2.3×10^1	ND
180	0.99	4.56	1.2×10^1	ND

ND : Not detected

Table 3. Organoleptic characteristics of chank meat pickle during storage (mean score)

Storage period, days	Appearance	Colour	Taste	Texture	Odour	Overall acceptability
0	7.67±0.6	7.78±1.03	7.33±0.82	6.67±0.67	7.33±0.94	7.33±0.67
30	7.53±0.82	7.72±0.80	7.23±1.12	7.44±0.40	7.43±0.81	7.80±0.20
60	7.46±0.78	7.73±0.62	7.82±0.03	7.73±1.05	7.82±0.91	8.00±0.60
90	7.55±0.40	7.80±0.09	7.83±0.35	7.70±0.12	7.85±0.30	7.90±0.40
120	7.53±0.30	7.78±0.09	7.81±0.20	7.60±0.24	7.82±0.81	7.89±0.60
150	7.53±0.72	7.76±0.10	7.82±0.02	7.70±0.21	7.84±0.32	8.02±0.14
180	7.53±0.56	7.77±0.60	7.81±0.12	7.70±0.16	7.83±0.24	8.00±0.40

The authors wish to thank Dr. Devaraj, Dean, Fisheries College and Research Institute, Tuticorin for his help and encouragement to carry out this work and for permission to publish the paper. This work formed part of the M.F.Sc. thesis of the first author.

References

Abraham, T.J. & Jeyachandran, P. (1993) Paper 38 presented at Third International Food Convention and Exhibition, CFTRI, Mysore (AFST)

AOAC (1975) *Official Methods of Analysis* 12th edn., Association of Official Analytical Chemists, Washington DC, USA

APHA (1976) *Compendium of methods for the microbiological examination of foods* (Speck M.L., Ed.), APHA, New York

Gupta, S.S. & Basu, S. (1985) *Fish. Technol.* **22**, 109

Hornell, J. (1927) *Madras Fish. Bull.* **11** (1), 27

MPEDA (1985) *Statistics of Marine Products Exports*, Marine Products Export Development Authority, Cochin, India

Muraleedharan, V., Joseph, K.G. & Devadasan, K. (1982) *Fish. Technol.* **19**, 41

Venkataraman, R. & Chari, S.T. (1953) *Curr. Sci.* **22**, 22

Vijayan, P.K., Perigreen, P.A. Surendran, P.K. & Balachandran, K.K. (1982) *Fish. Technol.* **19**, 25