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Preparation of Pickle from *Herdmania pallida*, Simple Ascidian

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Abstract: *Herdmania pallida*, simple ascidian belongs to the Subphylum Urochordata, Class Ascidiacea commonly available in Tuticorin coast. Like other animals such as prawns, molluscs and fishes, ascidians are also consumed as food in various parts of the world due to its high nutritional and medicinal value. In the present study, biochemical components like carbohydrate, protein, lipids and amino acids were quantitatively estimated in *H. pallida*. As this species has high protein content, in its body tissues, pickle was prepared from the mantle bodies and the product was packed in sterilized bottles and stored at ambient temperature. The shelf life period was assessed for a period of six months. Quality indicators like pH, microbial load and sensory evaluation were analysed. Spoilage was not observed through out the study period. In conclusion, the prepared pickle from the mantle bodies of *H. pallida* is good and safe product for human consumption and can be stored for a period of six months.

Key words: *Herdmania pallida* · Pickle · Organoleptic characters

INTRODUCTION

Pickling is an ancient gastronomic craft of preserving food in salt, brine or vinegar. This is one of the simplest and most effective ways to preserve perishable foods for months for out of season use and for long journeys. Like vegetable pickles, fish pickle has also gained popularity in the recent past. The demand for these types of fishery products becomes increasing day by day among the non-vegetarian population in throughout the world. Over fishing and over exploitation of fish species resulted in the depletion of conventional fishery resources from the marine environment. Hence, there is a need to promote an alternative and cost effective source of nutritious food from non-conventional sources to meet the needs of poor people. Ascidians constitute one of the important marine living renewable resources with high protein, glycogen and minerals as compared with other animal foods [1-3]. Ascidians are a well-known prochordates naturaly prey for many animals including flat worms, molluscs, rock crabs, starfishes, sea birds and sea otters. Ascidians are also as food in the form of various preparations in many parts of the world including Chile (Probecho), France (Figueodemer, violet), Korea (Meongge), Italy (limone di mare, uova di mare), Japan (hoya, maboya) etc. Recently interest has been developed in the class Ascidiacea, particularly the family Pyuridae. Though a lot of literature is available on the food products prepared from a number of marine organisms like prawn, molluscs, fishes etc, this is a pioneering work on this group in India.

Ascidians are also farmed and fished in many parts of the world for food. The tunic of the Pyurid ascidian *Microcosmus hartmeyeri* and mantle bodies of *Halocynthia roretzi* and *H. aurantum* are farmed and eaten in Japan [4]. In Europe, *Microcosmus sabatieri* and *M. vulgaris* are consumed whereas, *Pyura chilensis* is an important food item in Chile[5]. Though ascidians are one of the commercially important sources of sea food in various parts of the world, their utilization is not popular like other sea food due to lack of perception combined with the conservative food habits of the people in India. Since the biochemical parameters are important for reflecting the food value, a few biochemical assays like estimation of carbohydrate, protein, lipid and amino acids have been planned to evaluate the nutritional significance of commonly available simple ascidian *H. pallida* from Tuticorin coast. Based on the significant results obtained on the biochemical components, a by product-pickle was

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prepared from the mantle bodies and subjected to quality check for a period of six months by monitoring the quality indicators like pH, microbial and organoleptic characters. The acceptability and shelf life of the pickle was also assessed and discussed.

MATERIALS AND METHODS

Herdmania pallida, simple ascidian was collected from 5m depth with the help of SCUBA diver. They were cleaned initially with pure fresh water several times. Epibionts and other adhered materials were carefully removed and then dried in an oven at 80°C. The biochemical components like carbohydrate, protein, lipids and aminoacids were estimated [6-9].

For the preparation of pickle, mantle bodies were removed from the test, cleaned and blanched with a small quantity of salt, chilli powder and turmeric powder and kept for half an hour. Fresh garlic and green chillies were cut longitudinally. Cleaned fresh ginger was cut into small pieces. Fenugreek was fried and powdered. Standard recipe given in Table 1 was used to prepare pickle.

Edible oil was taken in a pan and heated to 180°C. For seasoning, mustard and curry leaves were added to the oil and fried, until attaining brown colour. Garlic, green chillies, lemon pieces were added one after another and stirred well and simmer for about ten minutes. Ginger pieces and Asafoetida solution were added and stirred. Vinegar was also added immediately. When there was a separation of liquid portion in the heated product by the addition of vinegar, blanched ascidians were added

Table 1: Standard Recipe

Ascidian	500g
Salt	30g
Chilli powder	20g
Ground nut oil	200ml
Turmeric powder	2.5g
Asafoetida	1g
Garlic	40g
Mustard powder	5g
Vinegar	40ml
Lemon	1
Green chilli	10g
Pepper powder	2g
Fenugreek	2.5g
Ginger	inch size
Citric acid	5g
Sodium benzoate	1g
Curry leaves	3g

Fig. 1: Showing Bottled ascidian pickle before sealing

Fig. 2: Ascidian pickle in the jars

slowly and mixed well. Quantity of gravy could be obtained by the addition of 2-3% blanched solution containing salt and citric acid. After removing from the fire required quantity of a food preservative, known as sodium benzoate was added. The prepared pickles were then packed in an air tight sterilized bottles (Figs 1 and 2), sealed and stored in a refrigerator for future use. Before sealing a little more hot oil was added. The quality indicators like pH, microbes and organoleptic characters were monthly analysed from random samples for each month and continued for a period of six months.

The digital pH meter was washed with sterile water and directly diped into the sample to measure the pH.

Pathogennic bacteria like *Solmonella* and *Vibrio* were enumerated by following the method of USFDA[10]. Total Plate Count was done by using Plate Count Agar medium[11]. For enumeration of bacteria, 5g pickle was macerated in 99 ml sterile saline water. Serial dilutions were prepared by adding 1ml of this solution to 9ml of the diluents. 1ml of the appropriate dilutions were plated on respective media and incubated at room temperature for 48 hours.

The sensory evaluation of the pickle was carried out by serving the sample to 5 groups (Group 1-children, Group 2-Family members, Group 3-Self Help Group, Group 4-Public and Group 5-Department staff).

Each group consisting of 10 members for each test to taste the sample to measure acceptance and the overall acceptability was determined by using hedonic scale of 1 to 9 [12]. Product with scores above 6 were considered as good and below 5 as poor as unacceptable.

RESULTS AND DISCUSSION

Protein (45mg/100mg), is the major constituents followed by lipid(18mg/100mg) carbohydrate (4.8mg/100mg) and aminoacids(1.201mg/100mg) in *H. pallida.* An increased protein content observed in the present study could be substantiated with the result of Ali [13]who reported higher amount of protein in the mantle body of a simple ascidian,*Phallusia nigra* in Tuticorin coast.

As already mentioned, the people of various parts of the world have realized and appreciated the food value of ascidians because of their low calorific value and high content of proteins. The present study also supports this view as *H. pallida* was found to contain maximum of 45mg/100g protein and this surpass many marine food resources in terms of protein content. The considerable use of marine species by the local people in their diet motivated us to carry out the pickling of ascidian. The ascidian pickle was prepared and subjected to various quality checks.

Fig. 3: Sensory attributes (taste) of the pickle *H. pallida* as in percentage

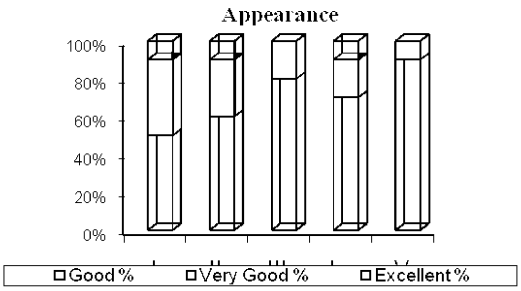

Fig. 4: Sensory attributes (appearence) of the pickle *H. pallida as in percentage*

Table 2: Changes in organoleptic scores of *H.pallida* pickle during storage period

Days	Appearance	Colour	Odour	Taste	Texture	Flavour
Initial	8.9	8.3	8.9	8.8	8.5	8.4
60 days	8.8	8.3	8.7	8.8	8.5	8.2
120 days	8.4	8.3	8.9	8.7	8.2	8.4
180 days	8.2	8.2	8.8	8.8	8.3	8.3

In the present study, pathogenic bacteria like *Solmonella* and *Vibrio* were absent throughout the study period.

The results of organoleptic characteristic of *H.pallida* pickle during storage are given in Table 2. The sensory evaluation of the product showed that the overall acceptability limit throughout the storage period was 100%. All the respondents accepted the pickle according to the selected parameters. Regarding the taste, 68% of the respondents accepted the product as excellent, 28% as very good and only 6% as good. Likewise, in consistency (90, 8 and 2%), appearance (70, 24 and 6%), colour (82,14 and 4%) and texture (72, 20 and 8%) as excellent, very good and good, respectively (Figures 3 to 8).

The pH of the pickle was found to decrease from an initial value of 4.86 to 4.81 when stored in sterilized air tight bottles. The change of pH is given in Figure 9.

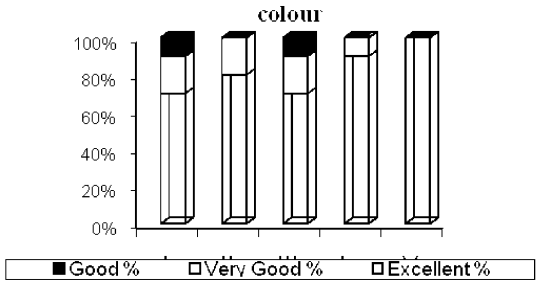

Fig. 5: Sensory attributes of the pickle (colour) *H. pallida* as in percentage

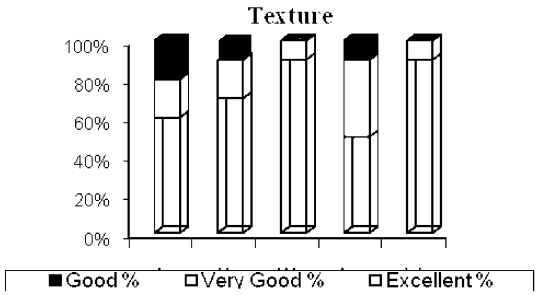

Fig. 6: Sensory attributes (texture) of the pickle *H. pallida* as in percentage

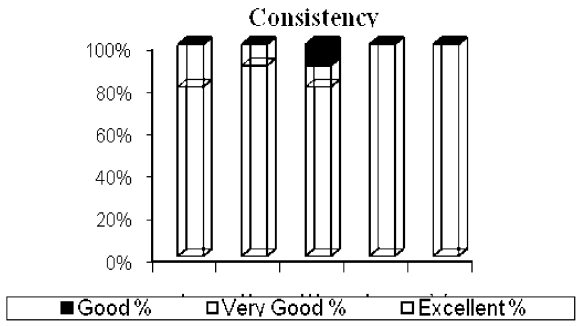

Fig. 7: Sensory attributes (consistency) of the pickle *H. pallida in percentage*

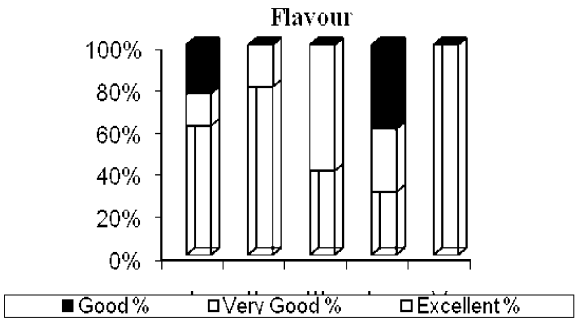

Fig. 8: Sensory attributes (Flavour) of the pickle *H. pallida as in percentage*

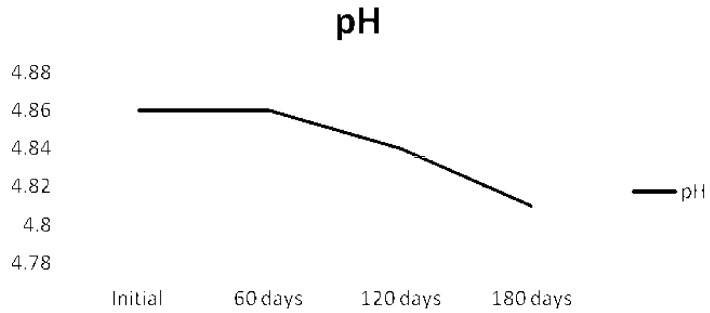

Fig. 9: Changes in pH in *Herdmania pallida* pickle during storage

The present study reveals that the preparation of pickles from the mantle bodies of *H. pallida* would pave a way for proper utilization of marine resources. The shelf life period of the prepared pickle is long and so it is safe and good for human consumption up to six months. Besides, there is more possibility of exporting this pickle as a canned product. Hence this product is recommended for pickling from the noncommercial source of marine resources.

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