PROCESSING MEAT OF CHICOREUS RAMOSUS INTO PICKLE

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ABSTRACT

Pickle was prepared of Chicoreus ramosus meat, common South Indian spices and other ingredients. A suitable standardized recipe was developed. The meat was softened by cooking under pressure (1 kg/cm²) before making pickle. The pickle was packed in air tight glass bottles and stored at room temperature. The quality and shelf life was assessed by chemical, microbial and organoleptic characters.

INTRODUCTION

Eating habits change very fast due to the vast improvement in socio-economic conditions. There is a marked swing and sophistication in the preparation of seafood. Consumers abroad and at home demand new types of value added, hygienically prepared, nutritious and attractively packed products (Koppakumar 1993). Marine products have been prepared mainly of shrimp, lobster, cuttlefish, squid, bivalves and some fish species. The use of new resources will bring additional income to the fishing population, and provide a suitable source of protein. C. ramosus is mainly consumed by the fishing population after being processed into dried chips (Patterson et al. 1992). Patterson et al. (1994) described 12 recipes with C. ramosus meat. Attempts have been made to develop standard methods for processing pickles from seafood. However, a limited number of species are used for this purpose: prawns (Chandrasekhar 1979); clams (Vijayan et al. 1982); green mussel (Muralleedharan et al. 1982) and blood clam (Gupta & Baiu 1985).

MATERIALS AND METHODS

Chicoreus ramosus were collected at Cuddalore in lobster gill nets. Lobster animals, 17-19 cm long, were transported to the laboratory. The shells were washed, operculum removed, boiled in water for 20 minutes, and the meat was shocked off. The edible portions, viz., foot, mantle and columnella muscle were separated manually and washed in potable water. The meat was cut into 1 cm pieces and softened by cooking in a pressure cooker (1 kg/cm²) for about 2-3 hours. The following spices and ingredients were used: 500 g softened meat; 400 ml vinegar; 250 g peeled garlic; 15 g coriander powder; 20 g chili powder; 100 g finely chopped ginger; 500 mg turmeric powder; 500 mg mustard; 250 mg fenugreek; 5 mg asafoetida powder; salt to taste and gingili oil for frying.

Procedure

The meat was marinated for half an hour in a mixture of the turmeric powder, salt and half the amount of the chili powder, then fried in refined gingili oil over medium heat until golden brown and kept aside. Mustard and fenugreek were fried till bursting. Coriander powder, ginger, garlic, asafoetida powder and the remaining chili powder were added and stirred well for about 5 min. The fried meat was added and stirred thoroughly for about 10 min. Then, 400 ml of vinegar was added to the meat mixture, mixed well by stirring, and cooled.

Quality evaluation

The pickle was packed in clean glass bottles, sealed air tight and stored at room temperature. The quality of the pickle was assessed monthly by examining the pH, liquid titratable acidity, microbiological and organoleptic characteristics. A pH meter was used to analyze the acidity: 10 g of the sample was thoroughly homogenized in a mortar with 100 ml distilled water. The liquid titrable acidity was estimated following the Gerassimov and Antonova (1979) method.

Microbiological examination

The total bacterial number (TBC) was calculated by the pour plate technique. A 1 g sample was collected aseptically and transferred to 99 ml of sterile 50% sea water and disintegrated with a sterile glass rod. Appropriate dilutions were made with 9 ml of 50%
Results

The shelf-life of the pickle was more than 5 months. The pH decreased and the liquid titratable acidity increased during the storage period (Table 1). Only the total bacterial number was counted (Table 1). The initial color of the pickle was pale red and the texture was tough (Table 2). The flavour was similar to that of traditionally prepared pickle from some fruits. No remarkable changes were observed in colour, flavour, texture or taste after storage.

Table 1. Changes in chemical and microbiological characteristics of C. ammobius meat pickle during storage

<table>
<thead>
<tr>
<th>Storage (days)</th>
<th>Titratable acidity (g%)</th>
<th>pH</th>
<th>TBR</th>
<th>No g</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4.25</td>
<td>2.21</td>
<td>290</td>
<td>n/a</td>
</tr>
<tr>
<td>30</td>
<td>4.44</td>
<td>3.84</td>
<td>170</td>
<td>n/a</td>
</tr>
<tr>
<td>60</td>
<td>5.34</td>
<td>5.72</td>
<td>65</td>
<td>n/a</td>
</tr>
<tr>
<td>90</td>
<td>5.54</td>
<td>5.56</td>
<td>54</td>
<td>n/a</td>
</tr>
<tr>
<td>120</td>
<td>6.44</td>
<td>5.17</td>
<td>44</td>
<td>n/a</td>
</tr>
<tr>
<td>150</td>
<td>7.56</td>
<td>4.44</td>
<td>35</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Discussion

The pH value decreased considerably from 4.21 to 3.44 during the storage period due to the increase in the liquid titratable acidity, probably because of acetic acid producing bacteria. Leibfritz et al. (1984) suggested that some acidogenic microorganisms have a low pH, even down to pH 3.5. Gartt and Basu (1985) made similar observations in pickle prepared from the blood of milkfish, Engraulis mordax.

Juras (1970) reported that the spices used in pickling may be slightly preserving and stuffing (1961) suggested that spices slightly retard bacterial spoilage. Sabri Rase et al. (1969) described an emulsion containing acetic and maltose and turmeric, paprika and oil as a preservative and have controlling effects on growth of aerobic and anaerobic microorganisms. Juras (1970) reported an inhibiting effect of condiments - clove, coriander, ginger, black pepper and red pepper on acetic acid bacteria and yeasts. According to Harnett and Gupta (1984) garlic reduces A. niger growth. Mathai and Manojkumar (1982) and Vijaya et al. (1982) stated that the mold growth in pickled products could be arrested by the use of dried mustard and garlic oil. In addition to the spices, the smoking of the meat under pressure 1-2 hours also destroys the microorganisms and hence the pickle prepared this way remains intact free from pathogenic.

References