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A CASE STUDY

Preservation of ready to eat drumstick products by canning and retort packaging

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Drumstick (*Moringa oleifera*), a perennial crop, is indigenous to India and it is cultivated all over the country. The tree is valued mainly for its tender pods, which are esteemed as vegetable. The tender leaves and flowers are also used as vegetable. They are rich in vitamin C. In general vegetables are parts of plants, which can be consumed either raw or processed in some way. Based on consumer acceptance and usage, vegetables are consumed with the main course of a meal. Vegetables, apart from providing nutrition, contribute to the appealing colour, texture and flavour of the food. Vegetables contain nonvolatile acids, such as citric, malic, oxalic, succinic acids. These contribute to the flavour of the vegetables.

Though drumstick is a perennial crop, limited availability during the off season makes it expensive. Also the consumers now-a-days look for the ready to eat form of food items. Thus it becomes necessary to preserve the drumstick. Various methods of preservations employs, high and low temperatures, preservatives, dehydration, irradiation, etc. Among these various methods, the use of high temperature, thermal processing is one of the proven food preservation techniques in which heat treatment destroy the pathogens as well as the oxidative enzymes and finds very wide applications.

In thermal processing, canning and retort packaging of foods have been the most widely used methods of food preservation. Thermal processing consists of heating food containers in pressurized retorts at specified temperatures for prescribed duration. The process time is calculated on the basis of achieving sufficient bacterial inactivation in each container/ pouch to comply with public health standards and to ensure that the probability of spoilage will be less than some minimum. It generally refers to a process during which the food product is subjected to high temperatures with the objective of inactivating the undesirable microorganisms or enzymes.

Wijayawardana and Bamunuarachchi (2002) reported that drumstick being a low acid vegetable and rich in vitamin C, has potential as a canned product. Freshly harvested drumstick samples were peeled and cut, rinsed and canned in 2.5% brine at 55% solids content. Processing at 121°C for 20 minutes resulted in optimum product safety and quality. Also allowed 69% retention of vitamin C and totally killed pathogens.

Researchers reported that thermal processing of fish products in retort pouches resulted in a product with good sensor attributes and also gave a shelf life of more than one year at ambient temperature (Bindu *et al.*, 2004; Gopal *et al.*, 2001; Ravishankar *et al.*, 2002). A convenient and ready to consume thermally processed black clam product was developed by Bindu *et al.* (2007) and vacuum packaged in indigenously developed retortable pouch. The total process