ABSTRACT

FORMULATION AND DEVELOPMENT OF READY TO EAT EXTRUDED TEXTURIZED CANNED SOYA PRODUCT

The soybean (U.S.) or soya bean (UK) (*Glycine max*) is an annual plant that has been used in China for 5,000 years as a food and a component of drugs. Soy contains significant amounts of all the essential amino acids for humans, and so is a good source of protein.

There is no any substitute food product for the vegetarians like meat balls. My major objective was the fulfillment of above blank and produces nutritional and healthy food products for all people from Soya for reasonable price.

To the accomplishment of my objective, four types of (such as chicken flavor, Devilled chicken, Fish flavour and curry flavour) soya based extruded textured ready-to-eat canned food products were developed. Here I had to face many challenges. i.e. formulation of a soya nugget like meat ball using extrusion technology. Here I had to more concern on size, shape, texture of the nugget, to develop a high quality nugget special type of cutter die was made. To improve the structure of the nuggets various types of binders such as isolated soya protein (ISP), xanthan, and corn starch were used. Out of them isolated soya protein was the best binder and small amount of cornstarch was also added. Undesirable beany flavour of soya flour was mass by adding various combinations of spices to flour mixture. Here defatted soya flour was used to in soya nugget formation.

In manufacturing process, hygienic conditions of workers and sanitary conditions of machines and equipments were highly concern. Microbial contaminations are directly affected to the quality and shelf life of the canned products.

When selecting the can type, the pH of the final product was play very important role. The pH of the final product vary between 5.1-5.7. So I was selected A1-SR can. It is resistance to pH 3.5 – 6.5 and also resistance to sulfur staining.

The critical factors of the canned products are the exhausting time, time temperature combination of the canning process, internal preasure of the retorter...etc. Those conditions should be sufficient to destroy the microbes and their spores in to desirable level present in the can. *Clostridium botulinum, Clostridium perfringens, Bacillus cereus, Listeria monocytogens, Staphylococcus aureus, Vibrio parahaemolyticus* are the some of pathogenic microbes present in canned foods. Here exhausting time was 7 min and retorting condition was 30 min at121°C under 1.5 bar pressure. Micro biological test (commercial sterility) was done at the industrial technical institute. According to results of that series of tests it was found that the product was commercially sterile.

Can was seamed by using a two roller can seaming machine. Seaming quality was evaluated by measuring actual can attributes against standard values. i.e. seam length 2.8 – 3.2mm, Body hook 1.9 – 2.1mm, Cover hook 1.73 – 2.05mm, Actual overlap >1.02, and Overlap % minimum 45%.

The variation of pH and other physical quality characteristics of final product were measured every week for about 2 months. There was no significant change of pH and in other quality characteristics.

Sensory evaluation revealed that the highest acceptance was for the Raigam products than other meat ball curry available at market.