World Academy of Science, Engineering and Technology
International Journal of Marine and Environmental Sciences
Vol:12, No:11, 2018

Development of Extruded Prawn Snack Using Prawn Flavor Powder from Prawn Head Waste

Authors : S. K. Sharma, P. Kumar, Pratibha Singh

Abstract : Consumption of SNACK is growing its popularity every day in India and a broad range of these items are available in the market. The end user interest in ready-to-eat snack foods is constantly growing mainly due to their ease, ample accessibility, appearance, taste and texture. Food extrusion has been practiced for over fifty years. Its role was initially limited to mixing and forming cereal products. Although thermoplastic extrusion has been successful for starch products, extrusion of proteins has achieved only limited success. In this study, value-added extruded prawn product was prepared with prawn flavor powder and corn flour using a twin-screw extruder. Prawn flavor concentrates prepared from fresh prawn head (Solenocera indica). To prepare flavor concentrate prawn head washed with potable water and blended with 200ml 3% salt solution per 250gm head weight to make the slurry, which was further put in muslin cloth and boiled with salt and starch solution for 10 minutes, cooled to room temperature and filtered, starch added to the filtrate and made into powder in an electrically drier at 43-450c. The mixture was passed through the twin-screw extruder (co-rotating twin screw extruder - basic technology Pvt. Ltd., Kolkata) which was operated at a particular speed of rotation, die diameter, temperature, moisture, and fish powder concentration. Many trial runs were conducted to set up the process variables. The different extrudes produced after each trail were examined for the quality and characteristics. The effect of temperature, moisture, screw speed, protein, fat, ash and thiobarbituric acid (TBA) number and expansion ratio were studied. In all the four trials, moisture, temperature, speed and die diameter used was 20%, 100°C, 350 rpm and 4 mm, respectively. The ratio of prawn powder and cornstarch used in different trials ranged between 2:98 and 10:90. The storage characteristics of the final product were studied using three different types of packaging under nitrogen flushing, i.e. a- 12-pm polyester, 12-pm metalized polyester, 60-11m polyethylene (metalized polyester a), b- 12-11m metalized polyester, 37.5-11m polyethylene (metalized polyester b), c- 12-11m polyethylene, 9-11m aluminium foil, 37.5-11m polyethylene (aluminium foil). The organoleptic analysis was carried out on a 9-point hedonic scale. The study revealed that the fried product packed in aluminum foil under nitrogen flushing would remain acceptable for more than three months.

Keywords : extruded product, prawn flavor, twin-screw extruder, storage characteristics
Conference Title : ICFAM 2018 : International Conference on Fisheries and Aquaculture Management
Conference Location : Tokyo, Japan
Conference Dates : November 12-13, 2018