COMBINED EFFECT OF GAMMA IRRADIATION AND REFRIGERATION ON CHEMICAL AND MICROBIAL CHARACTERISTICS OF FISH PROTEIN HYDROLYSATES OBTAINED FROM TILAPIA PROCESSING WASTE

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The intensification of fish farming in Brazil has contributed to the increase in the cultivation of tilapia. The fillet is the main product for sale corresponding between 30 and 40%, the rest is considered waste (meat remains, head, skin, bones, scales and viscera), which represent a serious environmental problem when discarded without treatment. However, this material, carcass, is a rich protein source that can be used in fish protein hydrolysate (FPH). This study aims to evaluate the conservation of FPH when submitted at gamma irradiation combined with refrigeration. Thus, FPH were prepared with Oreochromis niloticus waste using a commercial enzyme. The FPH was subjected at room temperature at 30°C (control), were irradiated with ⁶⁰Co gamma irradiation and stored at 4°C during 60 days. The doses were 2.5 kGy (FPH₂.₅ kGy), 5.0 kGy (FPH₅.₀ kGy) and 7.0 kGy (FPH₇.₀ kGy). Microbiological analyzes and proximate composition were performed periodically for 60 days. The present study focused on the monitoring of the following species of microorganisms: total mesophilic and psychotrophic, coliforms at 45°C; coagulase-positive staphylococci; Salmonella spp; fungi and Pseudomonas aeruginosa. The FPH that were stored at 30°C (control) was unacceptable after 24 hours showing 3.02 X 10⁵ CFU/mL. On day one all FPH subject at irradiation contained a low quantity of ash (3.70 – 4.03 g/100g) and a high amount of protein (68.73 - 71.03 g/100g). On day 60 all FPH remained with a low quantity of ash (1.5 – 4.13 g/100g) and a high amount of protein (60.14 – 66.16 g/100g). The microbiological tests showed that the irradiation applied to the FPH was effective in inhibiting the growth or development of pathogenic microorganisms and psychotrophic extending their shelf life. Proximate composition and microbiological data showed that FPH can be use until 60th day.

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