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Shelf-life Assessment of Fish Sausage in Combination of Pangas and Grass Carp

Churamani Bhusal, Sabita Subedi, Ram Bhajan Mandal, Prakash Kunwor, Jagat Kunwar, Jeetendra Maharjan, Anita Gautam, Asha Rayamajhi, Gun Bahadur Gurung, and Prem Timalisina*

National Fishery Research Centre
Nepal Agricultural Research Council
Godawari, Lalitpur, Nepal
timalisinaprem2042@gmail.com

An investigation was conducted to evaluate the microbiological, nutritional, and sensory aspects of fish sausages made with different proportions of Pangas (P) and Grass Carp (GC) following the Factorial Completely Randomized Design formulating 4 major treatments: T1 (100% P), T2 (80% P+20%GC), T3 (60%P+40%GC) and T4(50%P+50%GC) that were pasteurized and kept at -20°C for 90 days and more.

The study revealed that pasteurization initially reduces the overall microbial load but over the days, the number of slow growers and surviving bacteria rose. The growth of *Enterobacter*, *Vibrios*, *Salmonella-Shigella* were completely inhibited after pasteurization but not the growth of *Micrococcus* and *Staphylococcus*. Vacuum packing and freezing temperatures significantly inhibited the growth of these bacteria over several days, although latent colonies start to form by days 60 and 90 in Plate Count Agar. On the other hand, The Crude protein (CP), fat, and ash content of the main factor groups varied significantly ($p \leq 0.01$), Nutritional analysis revealed that T4 formulation has the highest CP (20.7 ± 0.3) and T1 has the lowest CP (18.37 ± 0.18).



Figure 1: Fish fillets

Storage duration had a significant impact on the composition of nutrients, with CP, fat, and ash peaking on Day 0 and falling on Day 90. It was also identified that slime formation and discoloration were the main factors for the poor qualities of sausages due to storage in cold temperature for longer period of time. Nonetheless, consumer sensory evaluation found that sausage quality in terms of taste, flavor, appearance color and overall acceptability was high up to 90 days.



Figure 2: Fish sausages