

## **Effects of mixing duration and raw materials on the physicochemical, microstructural and sensorial properties of sausages prepared from Red Tilapia (*Oreochromis* sp.)**

### **ABSTRACT**

Tilapia can be commercialised to produce sausages. However, the use of minced tilapia or tilapia surimi as the raw material and different mixing durations of the ingredients using the bowl cutter during the sausage production could affect the quality of the products. This study determined the effects of different mixing durations (10, 15 or 20 min) on the physicochemical, microstructural and sensorial properties of sausages made from minced tilapia and tilapia surimi. The washing of the minced tilapia during the surimi production significantly increased the tilapia surimi moisture content and pH, while reducing the protein, fat and ash contents. Subsequently, the addition of other ingredients to produce the sausages influenced the moisture, fat, ash and carbohydrate contents of both types of sausages. The type of raw material and mixing duration showed significant interactions in terms of linear expansion, water holding capacity and colour properties of the sausages. Individually, the tilapia surimi sausage had a better linear expansion, cohesiveness, colour and sensory acceptability than the minced tilapia sausage. The mixing times of 15 and 20 min produced better results for the physicochemical and sensory properties of both types of sausages. However, the gel strengths of both types of sausages were better when mixed for 15 min and the microstructure images supported this. Based on the results obtained, this study concluded that tilapia surimi as the raw material with 15 min of mixing duration is recommended to produce a better-quality sausage.

**Keyword:** Emulsion; Fish processing; Fish products; Mechanical mixing; Mixing time