



Development of Value-Added Chicken Sausages using Optimized Combinations of Edible Offal and Non-Meat Ingredients

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Abstract

Incorporation of poultry by-products into processed meat products has gained a wider attention due to their high nutritional value and their potential to reduce waste generation. This study evaluated the effect of different inclusion levels of chicken offal (liver + heart) on the nutritional composition, physicochemical and sensory attributes, and the production cost of chicken sausages. Five treatments: Control (100% meat +0% offal), T1 (90% meat +10% offal), T2 (80% meat + 20% offal), T3 (70% meat + 30% offal), and T4 (60% meat + 40% offal) were used. Treatments were evaluated for their proximate composition, physicochemical and sensory attributes. Raw material costs per 100 g of sausages were calculated. The highest protein content (57.0%), cooking yield (64.4%), and the minimum cooking loss (35.6%) were observed from the treatment T2. The control reported the minimum shrinkage percentage ($P<0.05$). Water holding capacity was the highest in T2, T3, and T4. Frying loss was not affected by the treatments ($P>0.05$). Control, T1 and T2 resulted in the highest folding test values ($P<0.05$). The T4 reported the optimal pH and the highest extract release volume (ERV) ($P<0.05$). Juiciness was the highest in T1 ($P<0.05$). Increasing the offal inclusion by 20% or above resulted in the highest springiness ($P<0.05$). External redness (a^*), external yellowness (b^*) and all the internal L^* , a^* and b^* parameters were significantly influenced ($P<0.05$) by the treatments. T4 reported the most favorable color attributes. Sensory results revealed that the treatments were acceptable and comparable to the control sample. Cost analysis indicated reduced production cost with increasing offal levels. The present study concluded that all organ offal mixed combinations are equal or superior to the control. Inclusion of chicken offal at 40% in chicken sausages is cost effective and enhances most of the physicochemical properties and sensory attributes tested.

Keywords: Chicken, Edible offal, Heart, Liver, Physicochemical, Sausages

