

EFFECT OF INCORPORATING VITAL WHEAT GLUTEN AS A NON-MEAT PROTEIN BINDER ON THE QUALITY CHARACTERISTICS OF EMULSIFIED CHICKEN SAUSAGES

J.H.S. Jayasekara^{1*}, M.C.N. Jayasooriya¹ and S. Walimuni²

¹*Department of Food Science and Technology, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka.*

²*Gills International (Pvt) Ltd, Katunayake, Sri Lanka.*

*hansijayasekara97@gmail.com

Protein binders in sausage mixtures act as functional ingredients which act as glue, binding structural elements together and forming a coherent sausage matrix. The vital wheat gluten (VWG), a by-product of wheat flour with ~80% protein, consists of gliadins, glutenins and residuals of cysteine. Upon heating, cysteine residues form the disulphide cross-linking between glutenin and gliadin and create a protein network, which traps components in the sausage mixture and influences the final quality of the sausage. This study evaluated the impact on physicochemical, textural, and sensory acceptance of emulsified chicken sausages formulated with added VWG. Treatments were formulated as follows: adding 1% VWG (VWG1), adding 2% VWG (VWG2), and adding 3% VWG (VWG3). Commercially available emulsified chicken sausages were used as a control, which did not contain VWG. A significant difference ($p < 0.05$) was observed in the pH values, with the control showing a higher pH than VWG1, VWG2, and VWG3, observed as 6.73 ± 0.03 , 6.56 ± 0.07 , 6.30 ± 0.09 , and 6.36 ± 0.05 , respectively. There was no significant difference ($p > 0.05$) in colour values among samples. Water holding capacity (WHC) was not significantly different ($p > 0.05$). Cooking loss varied among the treatments, control, VWG1, VWG2, and VWG3, observed as 2.11 ± 0.77 , 0.44 ± 0.18 , 2.50 ± 1.23 , and 2.68 ± 0.31 , respectively. Emulsion stability was not significantly different ($p > 0.05$). There was no significant difference ($p > 0.05$) observed in sensory acceptance among treatments. There were no significant differences ($p > 0.05$) observed in textural properties between samples except for hardness. Hardness of the sausages was significantly different when compared to the control, which had a lower value of 618.00 ± 288.00 . The cooking loss and hardness may have resulted from inconsistencies in cooking conditions. According to these results, VWG did not change pH, colour, or WHC; the emulsion stability and sensory acceptance of emulsified chicken sausages were not significantly different.

Financial assistance from Sabaragamuwa University of Sri Lanka and Gills International (Pvt) Ltd, Katunayake are acknowledged.

Keywords: Emulsified chicken sausages, Non-meat protein binder, Quality characteristics, Texture profile, Vital wheat gluten