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Use of textured vegetable protein as a replacement of meat portion in sausage making

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The objective of this research was to develop plant based sausages by including textured vegetable protein as an alternative for meat sausage. Preliminary trials were conducted to find the best type of soya and the level of vegetables. A further experiment was planned to determine the best combination of water and textured vegetable protein (TVP) levels. Three TVP levels (27.4, 34.1 and 42.6%) and two water levels (11.6, 19.3%) were used and the best combination (TVP 42.6% with water 19.3%) was selected based on sensory evaluation. Three TVP hydrated methods (ground TVP to hot water 1:1 ratio; ground TVP to hot water 1:2 ratio; ungrounded TVP to hot water 1:3 ratio) and two types of emulsions (oil and fat emulsions) were taken and two treatment combinations were selected including the best two TVP hydrated methods (ground TVP to hot water 1:1 ratio; ungrounded TVP to hot water 1:3 ratio) with fat emulsion. Then two isolated soya protein levels (10 and 20%) and two hydrated methods (ground TVP: hot water 1:1 ratio; ungrounded TVP: hot water 1:3 ratio) were taken and best combination of TVP hydrated method (ungrounded TVP: hot water 1:3 ratio) and ISP level (10%) were selected based on sensory evaluation. Then three TVP: flour (green gram flour + rice flour) ratios (1:1, 3:2 and 3:1) and two emulsion levels (2.9 and 4.3%) were taken and the best three combinations which include all TVP ratios with 4.3% emulsion level were selected based on sensory evaluation. The selected three sausage samples were sensory evaluated with a control and the best sample was selected ($P < 0.05$). Sensory results were analyzed using Kruskal-Wallis non parametric using SXW software package. Proximate analysis revealed that the developed sample gained moisture. Moisture, protein, fat, total ash and acid insoluble ash of the developed sample were 55.1, 14.6, 13.0, 3.1 and 0.1% respectively. Keeping quality analysis revealed that the water holding capacity, purge loss and peroxide value of the developed sample were 45.4%, 3.8% and 0.3 meq/kg respectively. Microbiology analysis revealed that TPC of the developed sample was 4.30×10^4 CFU/g TPC and that the selected product was safe for human consumption within the tested period. The developed sample is nutritionally better as an alternative sausage. However, further testing is needed to determine the shelf life of the product.

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