

Formation of Edible Casings from Hydrolyzed Ovalbumin

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Edible casings are environmental friendly approach that can be applied on food products to control the deterioration due to oxidation or microbial growth, while enhancing the nutritional attributes. Ovalbumin and its hydrolysate exhibit functional properties to a greater extent and can be used to form an edible casing. Thus, the present study was focused to develop an edible casing using hydrolyzed ovalbumin (HOB) and to assess its physical properties. Firstly, already extracted ovalbumin protein was hydrolyzed using 1% pepsin. The HOB solid was dissolved in distilled water (9 g/ 100 mL) and as the plasticizer either levels of glycerin (Gly) at 20, 30, 40 and 50% (w/w of protein) or sorbitol (SB) at 50 and 60% or lactic acid (LA) at 30, 40, 50 and 60% was added. Then, the pH of the solution was adjusted to 11.25 ± 0.10 and heated up to 45°C for 20 min in water bath. The treated solution was tasted into polypropylene covered plates and the films were peeled after 48 hrs at $25 \pm 2^\circ\text{C}$. After peeling, the films were subjected to heat treatment at 85°C for 20 min. The films formed using SB at 50 and 60% had a lower elongation and those of made using LA at 30, 40, 50 and 60% which had a higher brittleness. Films formed with Gly at 20% had higher brittleness while Gly at 40 and 50% had lower elongation compared to the Gly at 30%. The hardness of the prepared films was compared according to the different thicknesses as 0.06, 0.08, 0.10 and 0.12 mm. The thicknesses of 0.06 mm and 0.08 min had higher brittleness and thickness of 0.12 mm had a higher hardness than that of 0.10 mm. In conclusion, Both SB and LA were not suitable in film formation from HOB as plasticizers while the film with 30% Gly and 0.10 mm thickness showed a better film characteristics as an edible casing.

Keywords: Edible casing, Elongation, Glycerin, Hydrolyzed ovalbumin, Tensile strength