

# Utilization of Chicken Bone Waste and Tapioka Flour as An Environmentally Friendly Edible Film

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**Abstract.** Making edible films from gelatin of chicken bones with the addition of various starches is very important for Indonesia, which is predominantly Muslim. This is related to Islamic Sharia law which obliges followers to consume something that is clearly halal. Gelatin made from chicken bones is guaranteed to be halal. The purpose of this study was to determine how the extraction process of chicken bone waste with acid solvent, to know the process of making edible films and to find out how to characterize chicken bone edible films. This research was started by mixing the extracted chicken bones as much as 5 g, glycerol 40 % v/w, and starch concentration (0 %, 5 %, 10 %, and 15 % w/v) with distilled water and then heating it at 50 °C. at a speed of 1500 rpm, then printed on a petri dish with a diameter of 15 cm, then dried for 24 hours. then performed the tensile strength test, elongation, thickness test, water resistance, water vapor transmission rate and degradation test. The next stage is characterization of edible films using FTIR, XRD, TGA and SEM. The extraction process of chicken bones used 5 % HCl, the resulting yield was 8.22172 %, pH 6.0, 8 % moisture content, ash content was 0.945 %, in thickness testing the greater the starch concentration added, the greater the thickness of the edible film produced. The results of tensile strength in this study decreased in concentration with the increasing number of starch additions for elongation, which increased with the addition of starch. For the WVTR test that is included in the standard is a concentration of 0 and 15 %, for the water resistance test everything is included in the standard. FTIR results of chicken bones with starch variations and the addition of glycerol as a plasticizer have functional groups N-H, O-H, C-O, C = O, C-H, C-N. Edible films without the addition of starch were completely degraded in 30 days.

**Keywords:** Bioplastics, Gelatin, Glycerol, Biodegradable