

(69)**Isolation and Physicochemical Characterization of Gelatin from Chicken Waste****Dhushane S.^{1*}, Dhulxshana S.²**¹*Department of Agricultural Chemistry, Eastern University, Chenkalady, Sri Lanka*²*Gampaha Wickramarachchi University of Indigenous Medicine, Yakkala, Sri Lanka***dhusha111@gmail.com***Abstract**

The efficient utilization of food by-products has a direct impact on the economy and environmental pollution of the country. Non-utilization or underutilization of by-products leads to loss of potential revenues and increases the cost of disposal and may create major aesthetic and health problems. Besides pollution and hazard aspects, in many cases meat and poultry processing wastes can recycle raw material or convert into useful products of higher value. Gelatin is an essential functional biopolymer widely used in foods to improve elasticity, consistency, and stability. Gelatin is an essential ingredient with wide range of applications in various industries like food, pharmaceuticals and cosmetics. The poultry meat-processing industry produces considerably large amounts of by-products (such as chicken skins, heads, feathers, viscera, bones and legs) containing significant volumes of proteins, mainly collagen. To evaluate the waste from poultry as a source of gelatin, the present study focused on the extracting of gelatin using acid extraction method from skin and bone at different temperatures. The study examined its rheological and functional properties at five different temperatures (40° C, 45° C, 50° C, 55° C and 60° C). The recorded proximate composition of poultry skin and bone was to be moisture 68.42% and 58.60%, crude protein 11.45% and 9.30%, crude fat 11.00% and 4.27%, ash 3.50% and 9.65%, respectively. The proximate composition of extracted gelatin found to be comparatively better at 45° C temperature which than what at 40° C, 50° C, 55° C and 60° C. The gelatin extracted from poultry skin at five different temperatures (40° C, 45° C, 50° C, 55° C and 60° C) were 8.42%, 11.53%, 12.07%, 10.80% and 12.23% where as in bone was 7.30%, 7.49%, 7.50%, 7.52% and 8.03% respectively. The strength of gelatin extracted from skin at the different five temperatures mentioned were 256.57 g, 284 g, 267.33 g, 263 g and 260 g where in skin were 248.75 g, 292.67 g, 283.67 g, 274.33 g and 266 g respectively. Similarly, the viscosity, melting point, emulsifying capacity and stability of extracted skin gelatin was high at 45° C than at 40° C, 50° C, 55° C and 60° C. Hydroxyproline content measured by using spectrophotometer was found to be in the range from 4.67 mg/g to 8.16 mg/g and from 6.11 mg/g to 7.21 mg/g in extracted gelatin of poultry skin and bone respectively. The highest content of hydroxyproline was recorded at 45° C. The results of the study revealed that the poultry skin and bone is a prospective source to produce gelatin of good yield and quality with desirable rheological and functional properties at 45° C. These promising results may help forward efforts to be using poultry gelatin as a substitute for fish and bovine gelatins.

Keywords: By-products, Collagen, Gelatin, Poultry meat, Temperature