

## **Physicochemical and functional properties of buffalo (*Bubalus bubalis*) bone gelatin extracted using acid pre-treatment**

### **ABSTRACT**

This study explored the effects of pre-treatment conditions using hydrochloric acid and citric acid at concentrations of 0.025 M and 0.05 M, on the properties and extractability of gelatin sourced from buffalo bone. The highest yield (6.36 %) and hydroxyproline content (26.98 g/100 g) were obtained from gelatin extracted using 0.025 M HCl pre-treatment (H-1). In comparison, pre-treatment with 0.05 M citric acid (C-2) resulted in the lowest yield (3.79 %) with hydroxyproline content of 12.49 g/100 g. Buffalo bone gelatin had considerably lower moisture content ranging from 7.54 % to 11.92 % than standard bovine gelatin (SBG) (10.91 %) and a pH range of 5.31 to 5.44, indicating it is Type A gelatin. The gelatin that subjected to the pre-treatment by 0.025 M citric acid (C-1) illustrated the highest values for emulsion activity index (EAI), emulsion stability index (ESI), foaming expansion (FE), foaming stability (FS), water holding capacity (WHC), and fat binding capacity (FBC). Fourier Transform Infrared Spectroscopy (FTIR) results indicated a similar secondary structure to SBG explained by the presence of Amide A, B, I, II and III components. Apparent peptides at the  $\alpha$  and  $\beta$  regions were observed in the buffalo bone gelatin. Buffalo bone gelatin shows potential as an alternative source of halal gelatin manufacturing.