

Preparation and Characterization of Gelatins from Two Sudanese Edible Insects

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Received: March 16, 2011 / Published: June 15, 2011.

Abstract: Gelatins extracted from two edible insects *Aspongubus viduatus* (melon bug) and *Agonoscelis pubescens* (sorghum bug) were studied. The two insects showed 27.0 and 28.2% crude protein, respectively. Extraction of gelatin using hot water gave high yield followed by mild acid and distilled water extraction, respectively. SDS-PAGE pattern showed low molecular weight chains, and the two gelatins contained protein with molecular weight of 40 kDa as main component. The differential scanning calorimetry thermograms results confirm no difference between extraction methods concerning the extracted gelatin quality. FTIR spectra of melon and sorghum bug gelatins were similar and the absorption bands were situated in more than 6 bands in melon bug gelatin and only 6 bands in sorghum bug gelatin. Amide II bands of gelatins from both melon and sorghum bug appeared at around 1554 cm⁻¹, while Amide I bands (1734-1632 cm⁻¹) appeared only in melon bug method 2 (MB2) and melon bug method3 (MB3). Microstructures of the insect gelatin examined with the scanning electron microscope showed that melon bug exhibited the finest gelatin network with very small voids. Melon bug gelatin showed finer structure with smaller protein strands and voids than sorghum bug gelatin.

Key words: *Aspongopus viduatus*, *agonoscelis pubescens*, gelatin, differential scanning calorimetry, fourier transform infrared spectroscopy, sodium dodecyl sulphate gel electrophoresis.