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CHARACTERIZATION OF COLLAGEN DERIVED PRODUCTS PREPARED BY USE OF ALKALI AND DAIRY BY-PRODUCT

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Abstract

Leather processing is one of the highly polluting industries, due to generation of significant quantities of tanned and untanned wastes. Untanned wastes are less contaminated with chemicals and a better source of high value products such as collagen rather than tanned or finished leather wastes. In the present study, collagen dissolution substances (CDS) were prepared from bovine limed split wastes as value added products, by treating leather wastes with sodium hydroxide and fermented dairy by-product. After dissolution processes, the samples were lyophilized and their morphologies were examined with table top scanning electron microscopy (TSEM). The structures of CDS were characterized by X-Ray Diffraction (XRD), differential scanning calorimeter (DSC), and Fourier Transform Infrared Spectrometer (FTIR). In addition to the organoleptic evaluation of CDS, total Kjeldahl nitrogen and fat content, distribution of fatty acid methyl esters and spectrophotometric color determination of CDS were also investigated. The characteristics of CDS revealed that the alkali treatment caused a high degree of dissolution and led to deformation of the collagen structure. In comparison to alkali dissolution, CDS obtained with fermented dairy by product were found to have acceptable chemical and colloidal properties due to the conservation of collagen polypeptide bond structure. Following the results obtained, it may be concluded that fermented dairy by-product may find use for the hydrolyzation of collagen.

Keywords: bovine waste, chemical analysis, collagen, dairy by-product

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