FOURIER TRANSFORM INFRARED SPECTROSCOPY IN THE STUDY OF THE INTERACTION BETWEEN COLLAGEN AND NATURALIZED AND COMMERCIAL DYES

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We recently synthetized naturalized dyes (NDs) which are a new class of environmental friendly chemicals. ND can be obtained the covalent union of a dye species (*e.g.*, azo, anthraquinone, aniline type chromophore) with lactose, a natural sugar. In the present work NDs and the traditional acid dyes (ADs) were compared by studying the different behavior during the leather dyeing process. NDs are able to confer water-soluble properties to the dye molecule as a whole. The interactions between the dyes and the leather proteins were studied by FT-IR spectroscopy and thermogravimetric (TG) analyses. The protein cross-linking of the dyed leather samples was investigated by studying the 1654/1690 cm^{-1} peak height ratio and a deconvolution procedure of the amide I peak. The helix secondary structure was the predominant component of the leather proteins of the samples dyed with low concentrations of NDs (2%), while the b-sheets prevailed when leather samples were dyed with the traditional ADs and high concentrations of NDs (>5%). The data were discussed with respect to TG results.

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References
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