

Valorization of Waste and By-products for Protein Extraction and Functional Properties

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Abstract : The development of processes that allows the valorization of waste and by-products generated by industries is crucial to promote symbiotic relationships between different sectors and is mandatory to “close the loop” in the circular economy paradigm. In recent years, by-products and waste from agro-food and forestry sector have attracted attention due to their potential application and technical characteristics. The extraction of bio-based active compounds to be reused is in line with the circular bioeconomy concept trends, combining the use of renewable resources with the process’s circularity, aiming the waste reduction and encouraging reuse and recycling. Among different types of bio-based materials, which are being explored and can be extracted, proteins fractions are becoming an attractive new raw material. Within this context, BioTrace4Leather project, a collaboration between two Technological Centres – CeNTI and CTIC, and a company of Tanning and Finishing of Leather – Curtumes Aveneda, aims to develop innovative and biologically sustainable solutions for leather industry and accomplish the market circularity trends. Specifically, it aims to the valorisation of waste and by-products from the tannery industry through proteins extraction and the development of an innovative and biologically sustainable materials. The achieved results show that keratin, gelatine, and collagen fractions can be successfully extracted from hair and leather bovine waste. These products could be reintegrated into the industrial manufacturing process to attain innovative and functional textile and leather substrates. **ACKNOWLEDGEMENT** This work has been developed under BioTrace4Leather scope, a project co-funded by Operational Program for Competitiveness and Internationalization (COMPETE) of PORTUGAL2020, through the European Regional Development Fund (ERDF), under grant agreement N^o POCI-01-0247-FEDER-039867.

Keywords : leather by-products, circular economy, sustainability, protein fractions

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