

FUNDING PROGRAMME: PNIII

SUBPROGRAM: European and International Cooperation-Subprogram 3.2- Horizon 2020



PROJECT TITLE/ACRONYM: New recycling strategies for olive oil extraction process waste (wet olive pomace) to be applied in the leather industry, OLIPO

CONTRACT NO.: 144/2020

TOTAL PROJECT BUDGET: 570000 lei/120000 euro INCDTP'S BUDGET: 570000 lei/120000 euro

PROJECT STARTING DATA: 09/03/2020 PROJECT ENDING DATA: 08/03/2022

PAGINA WEB: <https://incdtp.ro/icpi/proiecte.html>

PARTNERS:

Miret y Compañia SA (MIRET), Spain-coordinator



**University of Lleida (UdL), Spain, subcontractor
INCDTP-Division ICPI, Partner**



SC TARO COMIMPEX SRL (TARO), Partner

s.c. TARO* COMIMPEX S.R.L. Tannery
Bucharest - ROMANIA

GENERAL OBJECTIVES:

OLIPO project proposes new strategies in the framework of circular economy, establishing new synergies between the leather industry and the olive oil extraction industry. The project aim was the revalue of an olive mill waste, the Wet Olive Pomace (WOP), for its reuse in the tanning sector.

The project outcomes generate an ecoefficiency improvement by reducing the environmental impact in two ways: reusing problematic waste (WOP) and avoiding the use of chemicals in tanning formulations.

SPECIFIC OBJECTIVES/ EXECUTION PHASES:

- Complete characterization of WOP composition (polyphenolic compounds, fats, tannins and nontannins) to assess the feasibility of using the extract of olive residues as an alternative to totally/partially replace the usual tanning extracts and other synthetic tannin agents used today. Chemical modification processes and extraction of tannins will be implemented to increase the tannin content from WOP.
- Development of new tanning processes, reducing petroleum based pretanning and tanning agents (aldehydes, naphthalene sulfonic, phenolic syntans and chromium salts) and commercial extracts (mimosa, quebracho or chesnut) used in the production of wet white, chrome and vegetable tanned leather obtained from

non renewable resources, by using the new sustainable tannin.

- Validate new advanced WOP extract which will transfer value added features to the leather, due to its antioxidant capability provided by their phenolic compounds composition (avoiding Cr(VI) generation in chrome tanned leather) and its antibacterial properties.

NOVELTY ELEMENTS/ SCIENTIFIC CONCEPT:

- Designing new tanning and retanning products from olive oil industry waste
- Recovery of valuable components of wet olive pomace and reuse in leather industry
- A circular model for recovery and reuse of a problematic waste.

EXPECTED EXPLOITABLE RESULTS:

- New tanning and retanning products as ecological alternatives for classical products based on aldehydes or petroleum-origin products;
- New ecological technologies for leather industry.

OBTAINED RESULTS:

- WOP extracts preparation;
- New bio-retanning product;
- Leathers retanned with new bio-retanning product



a)



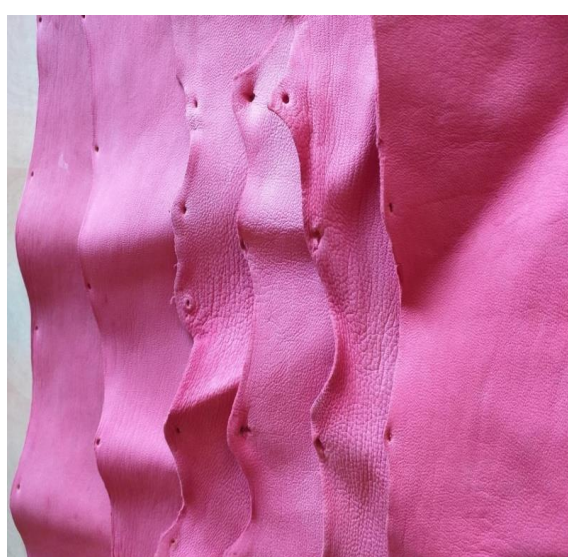
b)



c)



d)



e)

WOP extract preparation for pilot and industrial experiments for wet-blue bovine leathers and sheepskin retanning: a) pilot level vessel for WOP extracts processing; b) WOP extracts refinery by US solubilisation and concentration; c) bio-retanning product; d) bovine leathers; e) sheepskin leathers retanned with new bio-retanning product

DISSEMINATION, PATENT APPLICATIONS, AWARDS:

- **WoS published papers: 1**

M. Mercè Solé, L. Pons, M. Conde, C. Gaidau, A. Bacardit, Characterization of wet olive pomace waste as bio based resource for leather tanning, Materials 2021, 14, 5790, ISI indexed, <https://doi.org/10.3390/ma14195790>

- **BDI published papers: 2**

Gaidau, M. Stanca, D. Simion, O. Niculescu, C.-A. Alexe, C. Casas, A. Bacardit, S. Tonea, G. Paun, Olipo-Wet Olive Pomace, a New Renewable Source for Leather Retanning, prezentare orala la 8th International Conference in Advanced Material and Systems, ICAMS 2020, 1-3 October, Bucharest, oral presentation and communication published in Proceeding, BDI indexed, <http://icams.ro/icams>, <http://doi.org/10.24264/icams-20202.11.10>

D. Simion, C.Gaidau, G. Paun, M. Stanca, T.Stoica, Innovative Technologies Based on Membranes for Concentrating Extracts from Olive Cakes, Annals of University of Oradea, Fascicle of Textiles, Leatherwork, Vol. 22, Nr.1, pg . 125-132, 2021, ISSN 2457-4880, open access, Oradea University Publishing house, <https://docplayer.net/219276141-Innovative-technologies-based-on-membranes-for-concentrating-extracts-from-olive-cakes.html>

- **Patent Applications: 1**

OSIM no A/00718/26.11.2021, Gaidau C., Stanca M., Tonea S. Hadimbu E., “Biomaterial for leather retanning and method for application”.

CONTACT PERSON:

Dr.Carmen Gaidau, R4-leading researcher, carmen.gaidau@icpi.ro
Leather Research Department