

# IntegraValor - integrated strategy of valorization of agri-food waste

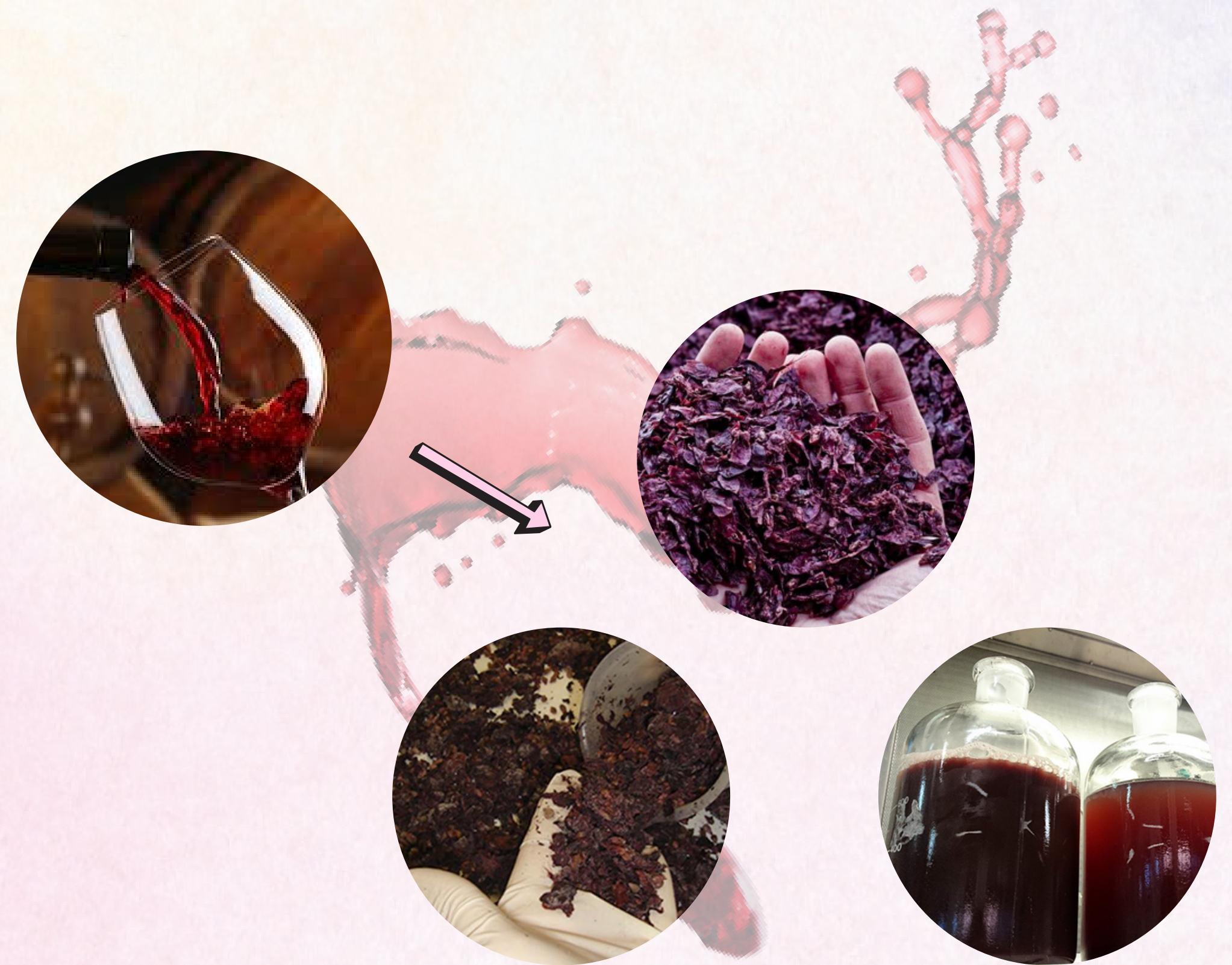
Leonardo Corrêa Gomes<sup>1,2</sup>, Carla Pereira<sup>1</sup>, Maria Inês Dias<sup>1</sup>, Miguel A. Pietro<sup>2</sup>, Isabel C.F.R. Ferreira<sup>1</sup>, Lillian Barros<sup>1</sup>

1 Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal;

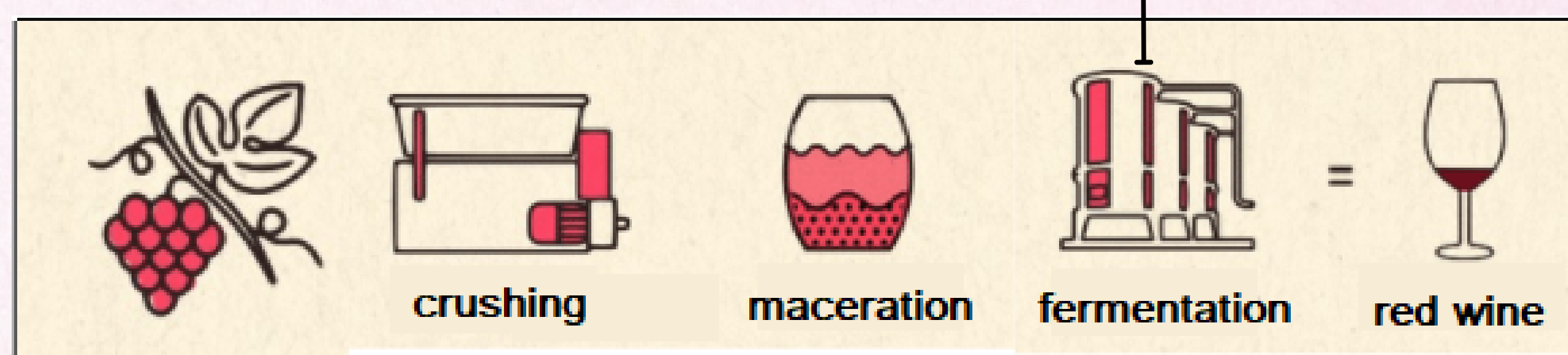
2 Nutrition and Bromatology Group, Department of Analytical and Food Chemistry, Faculty of Food Science and Technology, University of Vigo, Ourense Campus, 32004 Ourense, Spain.

## Introduction

The fruit and wine industries represent important sectors in Portugal, generating different products and allowing numerous jobs. However, at the same time, they also generate different bioresidues as peels, skins, peduncles, and non-compliant fruits that are not properly recovered by the industry (Farina et al., 2019). The accumulation of large amounts of this waste biomass often causes potential environmental impact, along with the loss of material that can be processed to produce a high number of value-added products, such as foodstuffs, biofuels, chemicals, pharmaceuticals, and others molecules of interest



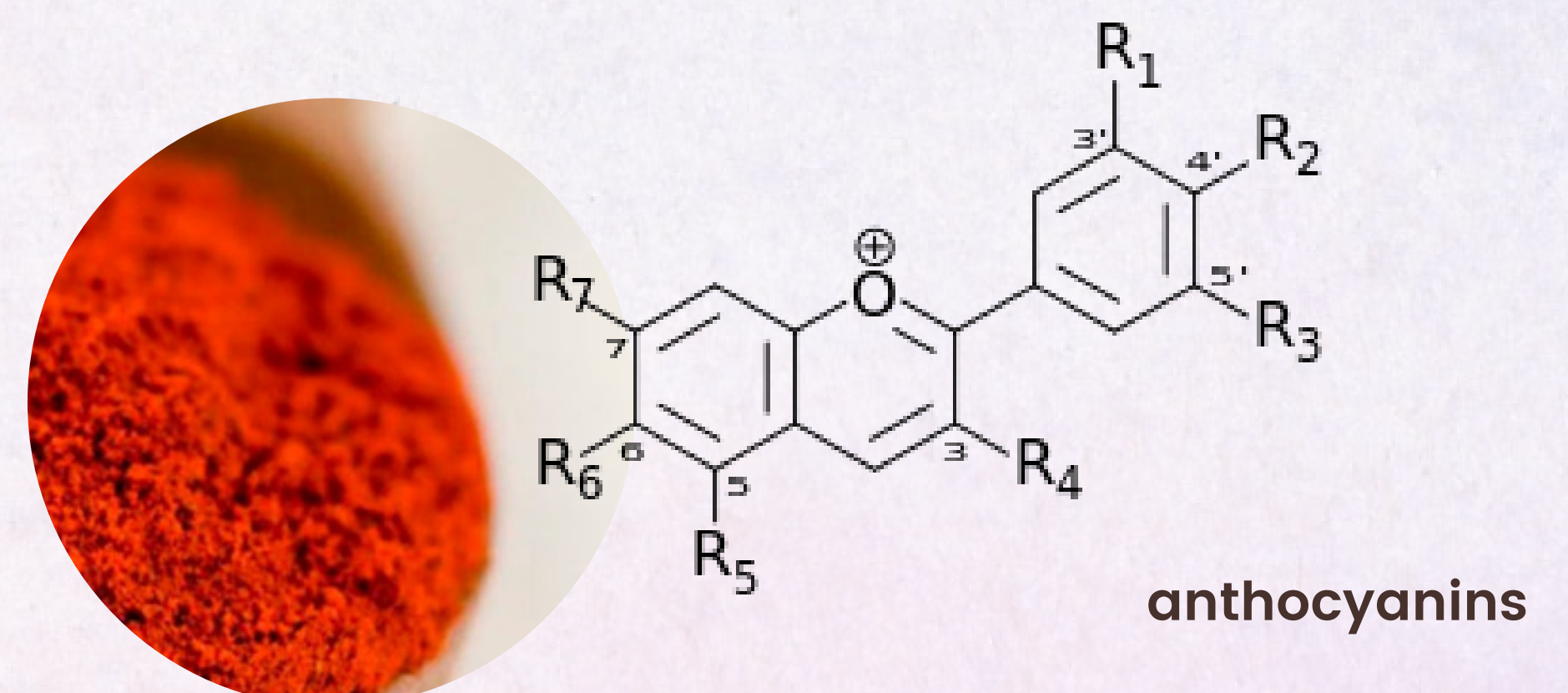
25% waste



IntegraValor project's main objective is to develop innovative strategies for the valorization of by-products from this sector, optimizing the processes of extraction of chestnut starch, dyes and phenolic compounds, hydrolysis of lignocellulosic materials, fermentation and alcoholic distillation, so that their application in the industrial environment can be simple, easy to perform, and with low cost. In addition, it is related to the main Sustainable Development Goals of the 2030 Agenda, from ONU, namely in the reduction of waste generation through reuse (Morana et al., 2017).

## Objetives

- 1 Produce alcohol for pharmaceutical use from non-compliant fruits (strawberry, raspberry, blueberry, and blackberry) and by-products (peel, fruit skin, leaves, and fruit stalks);
- 2 Extract nut starch from non-conforming fruits;
- 3 Extract value-added compounds (dyes and phenolic compounds-rich extracts);
- 4 Optimize processes for industrial application;
- 5 Enhance the recovery of 80% of the agri-food by-products generated by the leading co-promoter



### Reference

Farina M., Torres, M.D., Moreira R. Starch hydrogels from discarded chestnuts produced under different temperature-time gelatinisation conditions. *International Journal of Food Science and Technology* 2019, 1-8; Morana A., Squillaci G, Paixão S.M., Alves L., La Cara F, Moura P. Development of an energy biorefinery model for chestnut (*Castanea sativa* Mill.) shells. *Energies* 2017, 10, 1504.

### Acknowledgments

To the Foundation for Science and Technology (FCT, Portugal) for financial support through national tunas FC/MGTES to CIMO (UIDB/00690/2020); National funding by FCT, P.I., through the individual scientific employment program-contract for C. Pereira, M.I. Dias, and L. Barros contracts. To the operation POCI-02-0853-FEDER-045654, co-financed by the European Regional Development Fund (FEDER), through the Operational Program for Competitiveness and Internationalization (POCI) of Portugal2020, within the Project "IntegraValor - Integrated strategy for the valorization of agrifood by-products".

Contact:

leonardocorrea@ipb.pt

carlap@ipb.pt

maria.ines@ipb.pt