

Valorization of by-products from *Ribes nigrum* bud-derivative food supplements: Pulsed Ultrasound-Assisted Extraction vs a second maceration

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This study takes place in the context of an Alcotra Italy-France trans-frontier project called FINNOVER (2017-2020) whose main target is the implementation of new green chain productions exploiting the biodiversity of the ALCOTRA territory.

One of the FINNOVER chain is devoted to the production of plant bud-derivatives, a specific category of botanicals. This relatively new category of natural products, marketed as plant food supplements in the most of European Community, is produced by macerating meristematic tissues of trees and plants (i.e. buds and young sprouts) mainly spontaneously collected. This maceration is traditionally made according to the European Pharmacopeia 8th edition procedure [1].

Due to the limited collection period of the raw vegetable material, bud-derivatives are very expensive products compared to other botanicals, therefore a potential valorization of their by-products could represent an important economical resource to be exploited.

In this research, a re-use procedure to valorize *Ribes nigrum* bud by-products is presented. The wet marcs remaining after the production of the commercial glyceric macerate (GM) are extracted, using only a food-grade solvent (the same of the corresponding GM), both by a “second” traditional maceration and by an innovative extraction technology. This latter one consists of a Pulsed Ultrasound-Assisted Extraction (PUAE) employed to extract further valuable material from bud by-products. Similarly to what already published for *Castanea sativa* bud by-products [2], the PUAE extraction has proven to be a very good recycle strategy: in this case a comparison with the “second” traditional maceration has furtherly confirmed it.

References

- [1] Ordre National des Pharmaciens (1965). Codex Français, Monographie: Préparations Homéopathiques. In V. I. I. I. Codex Medicamentarius Gallicus (Ed.). Pharmacopée Française. Paris: Ministère de la santé publique et de la population.
- [2] An innovative green extraction and re-use strategy to valorize food supplement by-products: *Castanea sativa* bud preparations as case study, Federica Turrini, Dario Donno, Raffaella Boggia, Gabriele Loris Beccaro, Paola Zunin, Riccardo Leardi, Anna Maria Pittaluga, Food Research International, 2019, Volume 115, Pages 276-282. doi.org/10.1016/j.foodres.2018.12.018.