

FROM THE WASTE OF MUST CLARIFICATION TO THE PRODUCTION OF A HIGH POLYPHENOLS' RICH BUCCAL FILM: NEW INSIGHT TO TREAT ORAL OXIDATIVE STRESS-RELATED PATOLOGIES

DI PRIMA, Giulia¹, LA MANTIA, Cecilia¹, BELFIORE, Elena², DE CARO, Viviana¹

¹Dipartimento STEBICEF, University of Palermo, Palermo, Italy

²Dipartimento Me.Pre.C.C, University of Palermo, Palermo, Italy

giulia.diprima@unipa.it

Introduction: To support drugs' treatment of oral oxidative stress-related pathologies polyphenols can be ideal candidates due to their antioxidant and antiinflammatory activities¹. A liquid polyphenols' enriched excipient could be obtained by virtuous recovery of waste black bentonite (BB) coming from white grape must filtration².

Material & Methods: Both the BB-wet (starting waste as supplied) and BB-dry (after freeze-drying) were subjected to 7 consecutive cycles of green extraction by maceration with PEG200 as unconventional and innovative green solvent. The extracts were characterized by HPLC-DAD analysis, Folin-Ciocalteu, Bradford and DPPH assays. A thin buccal film was prepared by solvent casting using pectin as matrix polymer, calcium lactate and the best extract.

Results: The multiple maceration procedure greatly enrich PEG200 in polyphenols. The best product was obtained from the BB-wet (third extraction step) and resulted in a solvent recovery >40% and GAE \approx 4 mg/g. Consequently, it was directly used to prepare a soft, deformable and homogeneous buccal film.

Conclusion: The valorization of the waste BB could be a virtuous approach to recover polyphenols. The consecutive multiple green maceration process produced a highly polyphenols' rich secondary raw material directly useful to produce buccal films potentially promising to locally treat several oxidative stress-related oral pathologies.

Supported by: MUR, PON FSE REACT EU Research and Innovation 2014–2020, Action IV.5 and Action IV.6

References:

1. Belfiore E et al., *Cancers*, 2024, DOI: 10.3390/cancers16020260.
2. Di Prima G et al., *Sustainable Chemistry and Pharmacy*, 2024, DOI: 10.1016/j.scp.2023.101414.