CHEMICAL PROFILING AND ANTIFUNGAL ACTIVITY OF SUSTAINABLE PHENOLIC-RICH PLANT EXTRACTS

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Fungal infections pose a major challenge to the academic community and industry operating in biomedical and agri-food fields [1]. In this context, the antimicrobial properties of phenolic compounds and their relevant presence as secondary metabolites in plants and related by-products provides concrete opportunities for the development of new alternative strategies to replace synthetic products as biocidal and food preservatives, in line with the sustainability principles [2].

In this communication, the antifungal activities of phenolic-rich extracts obtained from various plant matrices against pathogens of food interest and dermatophytes were evaluated.

In detail, tests were carried out on extracts obtained from pomegranate (*Punica granatum* L.*)*, chestnut (*Castanea sativa* Miller), vine (*Vitis vinifera* L.), olive (*Olea europaea* L.) and green tea (*Camellia sinensis* Kuntze) matrices, wastes and by-products using sustainable procedures [3]. An HPLC/DAD/MS analysis was performed to define the qualitative and quantitative phenolic profile of extracts. The antifungal activities were carried out through an *in vitro* diffusion method against filamentous fungi *Rhizopus stolonifer*, *Alternaria* sp., *Aspergillus brasiliensis* and *Trichophyton interdigitale*. The emerging scenario revealed a wide range of specific inhibitory activities, showing, for some extracts, promising uses in the control of fungal infections and food contamination.

Figure 1 : Antifungal *in vitro* diffusion test against *Trichophyton interdigitale*

[1] Fisher M.C., Gurr S.J., Cuomo C.A., Blehert D.S., Jin H., Stukenbrock E.H., Stajich J.E., Kahmann R., Boone C., Denning D.W., Gow N.A.R., Klein B.S., Kronstad J.W., Sheppard D.C., Taylor J.W. *mBio* 11:e00449-20, 2020. doi :10.1128/mBio.00449-20.
[2] Romani A., Simone G., Campo M., Moncini L., Bernini, R. *PlosOne* 16, e0247298, 2021. doi: 10.1371/journal.pone.0247298.
[3] Romani A., Campo M., Urciuoli S., Marrone G., Noce A., Bernini, R. *Front. Nutr.* 7, 120, 2020. doi: 10.3389/fnut.2020.00120