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SUSTAINABLE PRODUCTIVE PROCESSES OF POLYPHENOL STANDARDIZED FRACTIONS

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This work concerns the planning and the optimization of sustainable productive processes of aqueous extracts from plant tissues and other natural materials, from dedicated crops and wastes of agro-industrial processes. The optimization of extraction, purification and concentration of natural standardized fractions from Cynara, Olea and Sweet Chestnut biomass, have been performed for new and innovative applications in feed, food and agronomics (1,2). Such fractions were analyzed and characterized by HPLC/DAD/ESI-MS methods; moreover, the antiradical/antioxidant activities were measured by DPPH• and Folin-Ciocalteu tests. The results suggested different uses as new natural additives to enhance quality, shelf life and biological value of feed/ food products in synergy or in substitution of the traditional chemicals (3). These results are part of the research activity of the UE Project Life Evergreen (LIFE13 ENV/IT/000461).

Table 1. PHENOLEA fractions were used for the highly antioxidant properties and protective biological and biomedical effects such as the effectiveness of olive leaf extract to lower blood pressure.

	mg/g P_OH-Tyr	mg/g P_ FF	mg/g P_FS	mg/g P_Preserve
Secoiridoid and OH-Tyr der.	267.00	185.39	34.87	30.38
Elenolic acid der.	0.48	28.04	7.26	8.16
Hydroxycinnamic der.	9.23	8.07	9.18	6.50
Flavonols		1.26	0.71	
Lignans		17.47	2.48	2.34
Total Polyphenols	**276.71**	**240.23**	**54.51**	**47.39**

Table 2. CYNARA plant fractions and commercial powders are useful in food applications or in the formulation of anticholesterolemic dietary supplements.

	mg/g Cynara_CUF	mg/g Cynara_Sol	mg/g Cynara_Spray	mg/g Cynara_ Commercial Extract	mg/g Cynara_ Leaf Powder
Hydroxycinnamic der.	20.8	24.52	4.84	122.55	13.00
Flavonols	0.84	0.93	14.03	1.53	0.00
Total Polyphenols	**21.64**	**25.45**	**18.87**	**124.08**	**13.00**

Table 3. SWEET CHESTNUT fractions, have been obtained for the tanning and wine industry and for new and innovative uses in feed, food and agronomics for their antimicrobial properties (4,5).

	mg/g liquid fraction	mg/g dry fraction
gallotannins	23.94	56.78
ellagitannins	86.92	168.0
Total Tannins	**110.9**	**224.8**

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