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ANTIOXIDANT, ANTICLOTTING, AND ANTIPLATELET AGREGATION ACTIVITIES OF PHENOLIC FRACTION RECOVERED FROM OLIVE MILL WASTE WATER OF *OLEA EUROPEA* L. CV. ARBEQUINA

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Abstract

Olive mill wastewater (OMWW) is both a harmful pollutant for the environment and a rich source of phenolic compounds that benefit human health. The present study was aimed to evaluate the antioxidant, anticlotting, and antiplatelet aggregation activities of Olea europaea L. Arbequina variety's OMWW phenolic extracts recovered by methanol/water (80:20) and ethanol/water (80:20) mixtures. The total polyphenols (TPs) in aqueous methanol and aqueous ethanol extracts were 157.9±0.05 and 137.8±0.03 mg GAE/g dry extract, respectively. The total flavonoids (TFs) represented almost 1/3 of the total polyphenols for both extracts. Reversed-Phase High-Performance Liquid Chromatography (RP-HPLC) analysis revealed that hydroxytyrosol is a major component, which makes up 30.72% and 28% of the total polyphenols in the aqueous methanol and aqueous ethanol extracts, respectively. Both extracts possessed substantial antioxidant activity, with IC_{50} values of ≥26.41 and ≥15.19 µg/mL for the DPPH and ABTS assays, respectively, and an $A_{0.5} \geq 45$ µg/mL for the reducing power assay. The two extracts exhibited a strong anti-clotting effect as well, extending clotting times in a dose-dependent manner in the intrinsic (≥57.31 s) and extrinsic (≥16.40 s) coagulation pathways, respectively. At a dose of 5 mg, aqueous methanol and aqueous ethanol extracts showed protective effects against fibrinogen and can inhibit platelet aggregation induced by arachidonic acid by 96% and 92%, respectively. The above findings suggest that the OMWW is a valuable source of safe bioactive compounds and constitutes a new approach for the prevention and treatment of venous and arterial thrombosis, which is associated with free radicals generated by oxidative stress.

Key words: antioxidant activity, anticlotting activity, antiplatelet aggregation activity, *Olea europea* L. cv. Arbequina, olive mill wastewater, phenolic compounds

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