

Antioxidant Properties of Pomace Extracts Directed for Chronic Wound Healing

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Abstract

The winemaking industry generates a vast number of residues, such as grape pomace (GP), which is an undervalued product usually discarded into the environment. Therefore, there is an urgent need to make the winemaking process more ecological and sustainable by seeking innovative applications for the residues and adding value to the wine production chain. Considering that GP is rich in phenolic compounds that are recognized for their antioxidant properties, they can be significant for the development of new alternatives for wound treatment, since antioxidant activity plays an important role in the wound healing process. In this way, this study aimed to test the GP antioxidant potential from red and white grape pomace (RGP and WGP) varieties. For this, a mixture of skins and seeds or stalks, dehydrated by lyophilization, were used to conduct a solid-liquid extraction using different solvents (water; ethanol 50:50 v/v and 70:30 v/v; acetone 50:50 v/v and 70:30 v/v). Extraction yields of 3-17% for RGP and 23-41% for WGP were obtained. Then, different types of GP extracts were evaluated for their total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity through ABTS and DPPH assays. The RGP extracts demonstrated higher values of TPC and TFC (165.5-295.0 mg of GAE/g extract and 0.258-1.397 mg of CE/g extract, respectively) than the WGP extracts (24.9-216.9 mg of GAE/g extract and 0.191-0.790 mg of CE/g extract, respectively). Even though all the samples showed high antioxidant activity, WGP extracts presented higher results (1.519-1.647 mg TE/g extract for ABTS and 0.364-1.792 mg TE/g extract for DPPH) than RGP extracts (0-1.615 mg TE/g extract for ABTS and 0-1.671 mg TE/g extract for DPPH). Overall, the results demonstrated that GP extracts, especially the ones from WGP ethanolic varieties extracted with 70:30 v/v, are promising for the development of new wound dressing alternatives.