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Composition and antioxidant, antibacterial, and anti-HepG2 cell activities of polyphenols from seed coat of *Amygdalus pcdunculata* Pall

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Abstract: This study aims at identifying the composition of polyphenols present in *Amygdalus pcdunculata* Pall seed coat (APSC), and characterizing their antioxidant, antibacterial, and anticancer activities. The polyphenols from APSC were composed of 32 compounds. The compounds with important biological activities included apigenin 7-O-glucoside (the main component; 34.53 mg/100 g), quercitrin (23.43 mg/100 g), kaempferol (10.28 mg/100 g), naringenin (6.27 mg/100 g), cyanidin 3-rutinoside (5.76 mg/100 g), cyanidin 3-O-galactoside (5.19 mg/100 g), and quercetin (2.50 mg/100 g), as well as a variety of phenolic acids (gentisic acid, 23.13 mg/100 g; salicylic acid, 18.79 mg/100 g; gallic acid, 2.55 mg/100 g; etc.). Characterization of the identified polyphenols indicated that APSC possessed high antioxidant activity, due to its ability to reduce Fe^{3+} and scavenge ABTS, DPPH, $\text{OH}^\cdot$, $\text{O}_2^{\cdot-}$, and H_2O_2 free radicals. The ability of APSC to reduce Fe^{3+} and scavenge ABTS radical, and H_2O_2 was stronger than that of control group ascorbic acid (Vc). The data from bacteriostatic test showed that polyphenols from APSC had good antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus*, and *Bacillus subtilis*, but showed no activity against *Aspergillus niger*. Cell viability assays using HepG2 cell illustrated that polyphenols from APSC significantly inhibited cell proliferation and induced cell apoptosis. The findings demonstrate that polyphenols from APSC may be utilized as is or further

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