Antioxidant polyphenols in almond and its coproducts.

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Abstract:
Antioxidant efficacy of defatted almond whole seed, brown skin, and green shell cover extracts was evaluated by monitoring inhibition of human low-density lipoprotein (LDL) oxidation, inhibition of DNA scission, and metal ion chelation activities. The total phenolic contents of ethanolic extracts of brown skin and green shell cover of almond were 10 and 9 times higher than that of the whole seed, respectively. Brown skin extract at 50 ppm effectively inhibited copper-induced oxidation of human LDL cholesterol compared to whole seed and green shell cover extracts, which reached the same level of efficacy at 200 ppm. Green shell over extract at 50 ppm level completely arrested peroxyl radical-induced DNA scission, whereas 100 ppm of brown skin and whole seed extracts was required for similar efficiencies. All three almond extracts exhibited excellent metal ion chelation efficacies. High-performance liquid chromatographic (HPLC) analysis revealed the presence of quercetin, isorhamnetin, quercitrin, kaempferol 3- O-rutinoside, isorhamnetin 3- O-glucoside, and morin as the major flavonoids in all extracts.