

Peach as a Potential Functional Food: Biological Activity and Important Phenolic Compound Source

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Abstract : Nowadays, the general population is more and more concerned about nutrition and the health implications of an unbalanced diet. Current knowledge regarding the health benefits and antioxidant properties of certain foods such as fruits and vegetables has gained the interest of both the general public and scientific community. Peach (*Prunus persica* (L.) Batsch) is one of the most consumed fruits worldwide, with low sugar contents and a broad range of nutrients essential to the normal functioning of the body. Six different peach cultivars from the Fundão region in Portugal were evaluated regarding their phenolic composition by LC-DAD and biological activity. The prepared extracts' capacity to scavenge free-radicals was tested through the stable free radical DPPH• and nitric oxide (•NO). Additionally, antidiabetic potential and protective effects against peroxy radical (ROO•) induced damage to erythrocytes were also tested. LC-DAD analysis allowed the identification of 17 phenolic compounds, among which 5-O-caffeoylquinic acids and 3-O-caffeoylquinic acids are pointed out as the most abundant. Regarding the antioxidant activity, all cultivars displayed concentration-dependent free-radical scavenging activity against both nitrogen species and DPPH•. In respect to α -glucosidase inhibitory activity, Royal Magister and Royal Glory presented the highest inhibitory activity ($IC_{50} = 11.7 \pm 1.4$ and $17.1 \pm 1.7 \mu\text{g/mL}$, respectively), nevertheless all six cultivars presented higher activity than the control acarbose. As for the protective effect of Royal Lu extract on the oxidative damage induced in erythrocytes by ROO•, the results were quite promising showing inhibition IC_{50} values of $110.0 \pm 4.5 \mu\text{g/mL}$ and $83.8 \pm 6.5 \mu\text{g/mL}$ for hemolysis and hemoglobin oxidation, respectively. The demonstrated activity is of course associated to the peaches' phenolic profile, rich in phenolic acids and flavonoids with high hydrogen donating capacity. These compounds have great industrial interest for the manufacturing of natural products. The following step would naturally be the extraction and isolation from the plant tissues and large-scale production through biotechnology techniques.

Keywords : antioxidants, functional food, phenolic compounds, peach

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