

## Stems of *Prunus avium*: An Unexplored By-product with Great Bioactive Potential

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**Abstract :** Over the last few years, the traditional medicine has gained ground at nutritional and pharmacological level. The natural products and their derivatives have great importance in several drugs used in modern therapeutics. Plant-based systems continue to play an essential role in primary healthcare. Additionally, the utilization of their plant parts, such as leaves, stems and flowers as nutraceutical and pharmaceutical products, can add a high value in the natural products market, not just by the nutritional value due to the significant levels of phytochemicals, but also by the high benefit for the producers and manufacturers business. Stems of *Prunus avium* L. are a byproduct resulting from the processing of cherry, and have been consumed over the years as infusions and decoctions due to its bioactive properties, being used as sedative, diuretic and draining, to relief of renal stones, edema and hypertension. In this work, we prepared a hydroethanolic and infusion extracts from stems of *P. avium* collected in Fundão Region (Portugal), and evaluate the phenolic profile by LC/DAD, antioxidant capacity,  $\alpha$ -glucosidase inhibitory activity and protection of human erythrocytes against oxidative damage. The LC-DAD analysis allowed to the identification of 19 phenolic compounds, catechin and 3-O-caffelquinic acid were the main ones. In a general way, hydroethanolic extract proved to be more active than infusion. This extract had the best antioxidant activity against DPPH• (IC<sub>50</sub>=22.37 ± 0.28 µg/mL) and superoxide radical (IC<sub>50</sub>=13.93 ± 0.30 µg/mL). Furthermore, it was the most active concerning inhibition of hemoglobin oxidation (IC<sub>50</sub>=13.73 ± 0.67 µg/mL), hemolysis (IC<sub>50</sub>=1.49 ± 0.18 µg/mL) and lipid peroxidation (IC<sub>50</sub>=26.20 ± 0.38 µg/mL) on human erythrocytes. On the other hand, infusion revealed to be more efficient towards  $\alpha$ -glucosidase inhibitory activity (IC<sub>50</sub>=3.18 ± 0.23 µg/mL) and against nitric oxide radical (IC<sub>50</sub>=99.99 ± 1.89 µg/mL). The Sweet cherry sector is very important in Fundão Region (Portugal), and taking profit from the great wastes produced during processing of the cherry to produce added-value products, such as food supplements cannot be ignored. Our results demonstrate that *P. avium* stems possesses remarkable antioxidant and free radical scavenging properties. It is therefore, suggest, that *P. avium* stems can be used as a natural antioxidant with high potential to prevent or slow the progress of human diseases mediated by oxidative stress.

**Keywords :** stems, *Prunus avium*, phenolic compounds, biological potential

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