

BIOACTIVE COMPOUNDS AND ANTIOXIDANT ACTIVITY OF EXTRACTS FROM EDIBLE FLOWERS OF *PUNICA GRANATUM* AND *CITRUS AURANTIUM*

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Abstract

Increasing interest in edible flowers referred on their continuously growing consumption. Extracts of bioactive substances by solvents were the most common method for the processed edible flowers. However, most of the reports deal with ethanol or methanol extracts. Information about the bioactive compounds in water and acetone extracts are limited. Moreover, some reports presented values for fresh weight, while bioavailability of dry extracts and their antioxidant potential were not discussed in details. Therefore, the object of the current study was to evaluate the content of the bioactive compounds and in vitro antioxidant activity of water and acetone extracts obtained from pomegranate (*Punica granatum*) and orange trees (*Citrus aurantium*) edible flowers.

The commercial available flowers of pomegranate and orange trees were extracted with water and acetone in an ultrasonic bath. The extracts of edible flowers were analyzed for: carbohydrates (sugars and uronic acids), total chlorophylls, total carotenoids, total phenols, total flavonoids, anthocyanidins. Antioxidant activity was evaluated by four reliable methods (2,2-diphenyl-1-picrylhydrazyl - DPPH, 2,2'-azino-bis-3-ethylbenzthiazoline-6-sulphonic acid - ABTS, ferric reducing antioxidant power - FRAP and cupric reducing antioxidant capacity assays - CUPRAC).

Orange trees (*Citrus aurantium*) water extract and acetone extracts from pomegranate (*Punica granatum*) were obtained in the highest yields. Carbohydrates dominated in orange flowers extracts. Sucrose, glucose and fructose were detected in water extracts of edible flowers. Total chlorophylls, carotenoids, flavonoids and anthocyanidins dominated in acetone extracts from pomegranate. However, water extract of pomegranate contained the highest level of total phenolic compounds 230.8 ± 9.5 mg GAE/g extract. Due to the high total phenolic content, the water extracts of pomegranate demonstrated well pronounced antioxidant activity.

The acetone and water extracts from pomegranate (*Punica granatum*) and orange trees (*Citrus aurantium*) edible flowers were evaluated as sources of antioxidants. The results reveal the potential application of the obtained edible flower extracts as additives in food and cosmetics.

Key words: Edible flowers, Pomegranate, Orange trees, Bioactive compounds, Uronic acids, Sugars, Antioxidant activity.