

Phenolic content and antioxidant potential of pomegranate by-products

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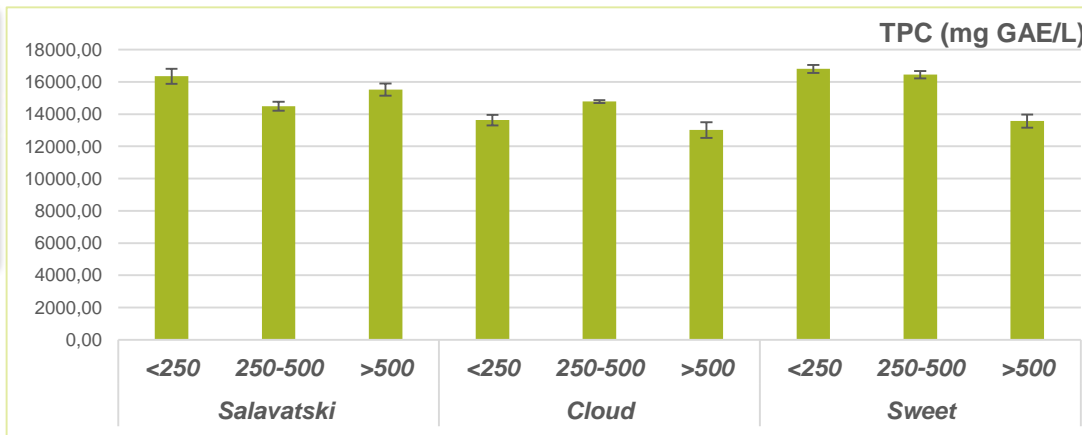
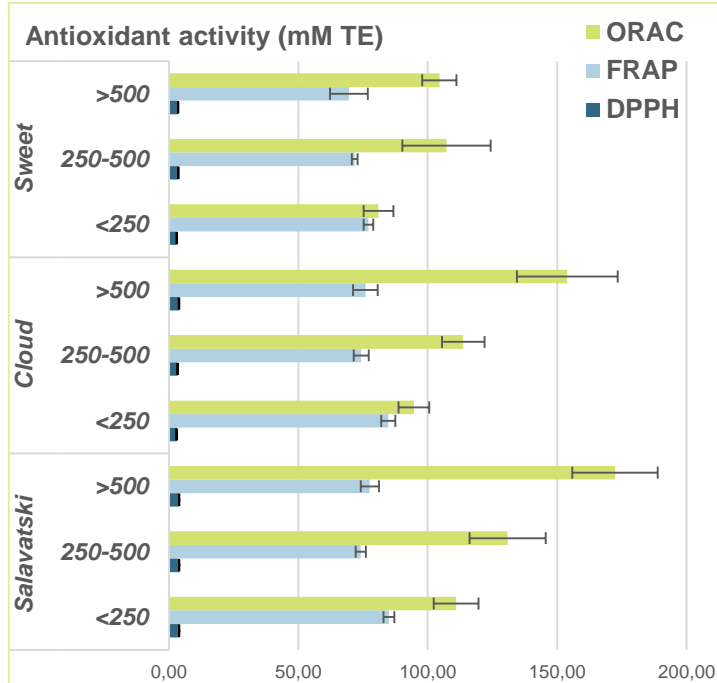
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Introduction and Methodology

Despite existing reports on the extraction of valuable bioactive components from pomegranate peel, many parameters of the extraction methods still need to be investigated, evaluated and defined. One such parameter is the particle size of the sample in solid-liquid extraction that significantly affects the bioactive components content in the prepared extracts. In this study, the effect of pomegranate peels particle size on phenolic content and antioxidant potential was investigated. Pomegranate peels were collected from three sweet-sour (total acidity 1-2%) varieties: *Salavatski*, *Cloud* and *Sweet*, from the experimental plantation of the Institute for Adriatic Crops. The by-product samples were divided into three fractions based on particle size: >500 μm, 250-500 μm and <250 μm. The extraction was performed using ultrasound in hydroethanolic mixture (1:1). Total phenolic content (TPC) was determined using the Folin-Ciocalteu method, while antioxidant activity was assessed using ferric reducing antioxidant power (FRAP), oxygen radical absorbance capacity (ORAC) and (2,2-diphenyl-1-picrylhydrazyl) (DPPH) free radical scavenging method.



Results and Conclusion

- ✓ high TPC (13-17 g GAE/ L of extract) and good antioxidant activity in all extracts
- ✓ significantly higher TPC in Salavatski and Sweet varieties, particularly in the fraction with <250 μm particles
- ✓ highest TPC in Cloud variety was observed in the 250-500 μm fraction
- ✓ highest antioxidant activity was determined using the ORAC method
- ✓ extracts from >500 μm fractions being the most active
- ✓ Salavatski varieties showed a rich TPC with exceptionally high antioxidant potential in all tested fractions
- ✓ These findings highlight the great potential of pomegranate peel by-products for further application in food. However, additional analysis should be conducted to confirm their biological activity in food models.