

Nutritional Composition and Biological Activity of Goldenberry (*Physalis peruviana* L.): An Emerging Fruit Crop in Portugal



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INTRODUCTION

European consumers have a growing interest in new fruits and flavours, which has promoted the production and commercialization of exotic fruits such as goldenberry (*Physalis peruviana* L., Fam. Solanaceae). Colombia and South Africa are currently the main producers of this fruit, but it can be cultivated in almost all the highlands of the tropics and in several parts of the subtropics given its ability to adapt to a wide range of agroecological conditions [1]. The consumers demand for this small orange berry has also

been driven by its nutritional value and health-promoting effects [2]. Although there are different studies about this fruit, the available information is still scarce. Furthermore, the fruit quality attributes can vary depending on the agricultural practices and edaphoclimatic conditions of the growing sites. Therefore, this study was carried out to evaluate the nutritional composition and the *in vitro* antioxidant and antimicrobial activity of goldenberry cultivated in the Northeast region of Portugal.



Figure 1. Goldenberry fruits in their calyx

Goldenberry samples (Figure 1) were lyophilized and analysed for their proximate composition (moisture, protein, fat, ash, dietary fibre, and carbohydrates) following official methods of food analysis [3]. The profiles in sugars, organic acids, fatty acids, and tocopherols were characterized by previously optimized chromatographic

METHODOLOGY

methods [3]. The powdered goldenberry sample was also prepared in a hydroethanolic extract used for evaluation of the antioxidant activity (by oxidative haemolysis and lipid peroxidation inhibition assays) and antimicrobial effects against foodborne bacteria and fungi (by serial microdilution methods) [3].

RESULTS & DISCUSSION

The nutritional analysis revealed high levels of protein and fibre (Figure 2) and a lipid fraction consisting mainly of polyunsaturated fatty acids. Citric and ascorbic acids were detected in high amounts, as well as the four tocopherol isoforms. The hydroethanolic berry extract showed capacity for inhibiting haemolytic oxidation and lipid peroxidation, antibacterial effects (Figure 3) against *Staphylococcus aureus* and *Bacillus cereus*, and antifungal activity against *Aspergillus* and *Penicillium* strains.

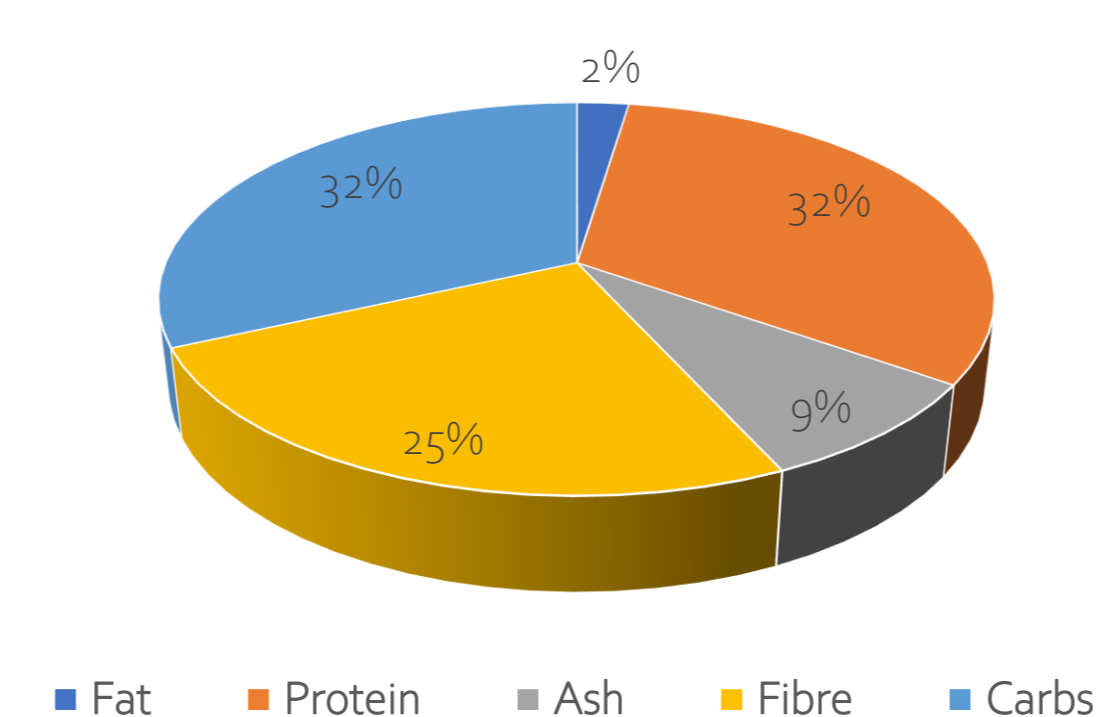


Figure 2. Proximate composition of goldenberry.

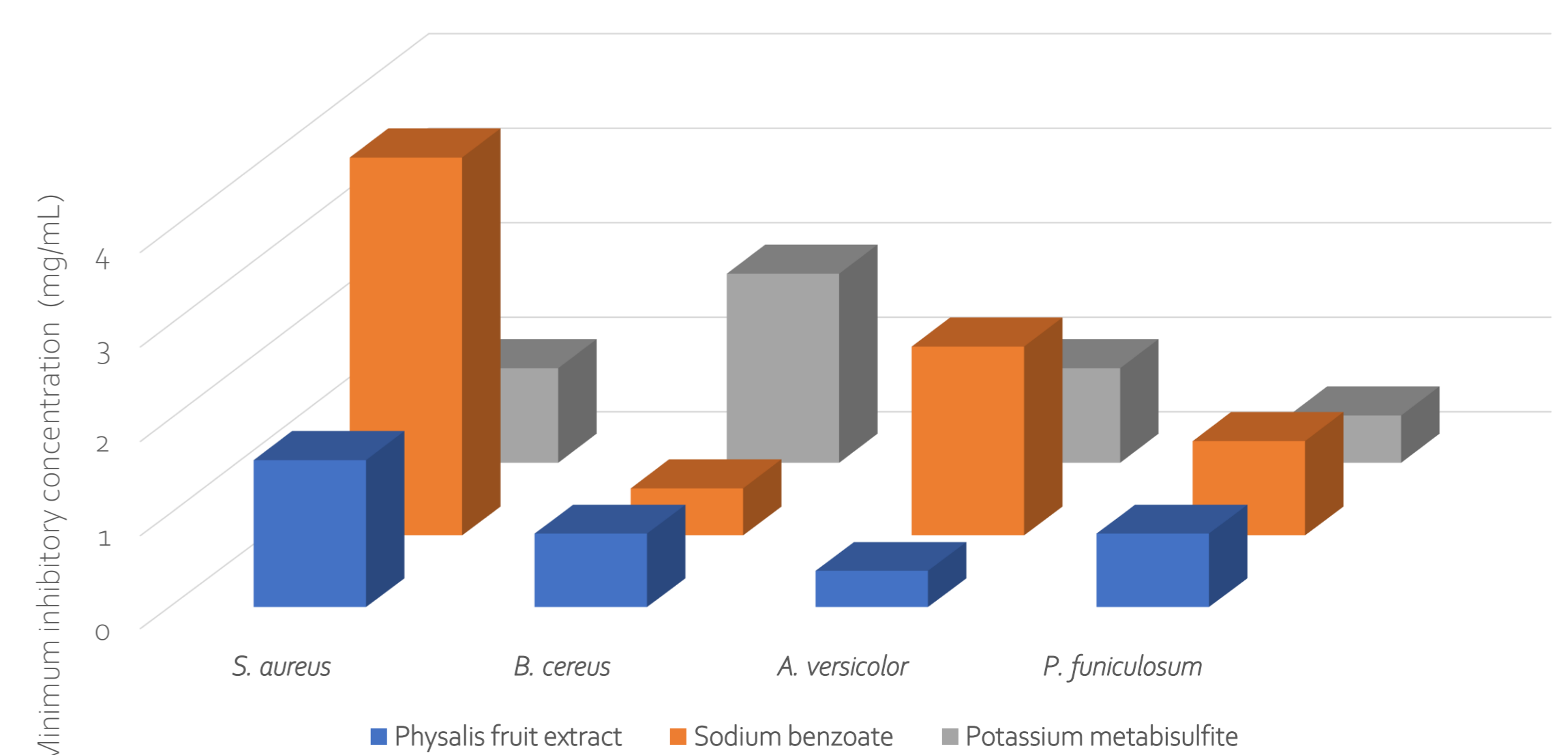


Figure 3. Antimicrobial activity of goldenberry extract and food preservatives

CONCLUSION

Overall, this work highlighted the nutritional value of goldenberry, which has been pointed out as a functional fruit with a growing expression in the Portuguese market.

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