

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



UNIVERSIDADE DE VIGO

Mikel Añibarro-Ortega <sup>1,2</sup>, José Pinela <sup>1\*</sup>, Jovana Petrović <sup>3</sup>, Miguel A. Prieto <sup>2</sup>, Marina Soković <sup>3</sup>, Isabel C.F.R. Ferreira <sup>1</sup>, Jesús Simal-Gándara <sup>2</sup>, Lillian Barros <sup>1</sup>

<sup>1</sup> Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

<sup>2</sup> Nutrition and Bromatology Group, Department of Analytical and Food Chemistry, Faculty of Food Science and Technology, University of Vigo—Ourense Campus, E-32004 Ourense, Spain

<sup>3</sup> Institute for Biological Research "Siniša Stanković"- National Institute of Republic of Serbia, University of Belgrade, Bulevar despota Stefana 142, 11000 Belgrade, Serbia

Email: jpinela@ipb.pt

## 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.

## METHODS

Goldenberry (Figure 1) samples 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 standardized chromatographic methods [3]. The powdered goldenberry sample was also prepared in a hydroethanolic extract used for the evaluation of antioxidant activity (by oxidative haemolysis and lipid peroxidation inhibition assays) and antimicrobial effects against foodborne bacteria and fungi (by serial microdilution methods) [3].



Figure 1. Goldenberry fruits in their calyx

## RESULTS AND DISCUSSION

The nutritional analysis revealed high levels of proteins and carbohydrates (mainly fructose and glucose) 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 against *Staphylococcus aureus* and *Bacillus cereus*, and antifungal activity against *Aspergillus* and *Penicillium* strains.

## 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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