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1.2.

SUSTAINABLE & INTEGRATIVE APPROACH FOR VALORISATION OF CITRUS BY-PRODUCTS IN THE MEDITERRANEAN – AN OVERVIEW OF MEDISMART

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Ana A. Vilas-Boas is a PhD student at the ESB-UCP since 2020 with the main purpose of developing a sustainable & integrative approach to valorise orange juice by-products to create a new dietary supplement to enhance human gut modulation. She holds a B.Sc. in Biotechnology and a MSc in Food Engineering.

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Abstract

Citrus belongs to the family *Rutaceae* and are one of the most widely cultivated fruit crop and one of the main consumed products in the Mediterranean area [1]. The annual production of different types of citrus fruits was approximately 143 thousand tonnes, of which the most important are oranges, *Citrus sinensis* L. (76 thousand tonnes); mandarins, *Citrus reticulata* L. (37 thousand tonnes); lemons, *Citrus limon* L.; and limes, *Citrus aurantifolia* L. (20 thousand tonnes), in the year 2019 [2]. The Mediterranean Basin accounts for about 20% of the world citrus production and about 60% of the world fresh citrus trade. There are two clearly differentiated markets in the citrus sector: fresh citrus market and processed citrus products market. The last one, although with several representative products in the market is mainly dominated by orange juice which, together with the production of other citrus juices (grapefruit and lemon) has increased in the last years, thanks to product convenience and healthiness, promotional activity and technological advances in processing, storage and packaging [3]. However, the huge amount of by-products generated during the citrus juice processing still remains a problem for the companies and also for the environment since these by-products are deposited in landfills. During the citrus processing, about of 50% of fresh citrus weight is by-product (mainly peels and pulps) which are a huge problem if treated as a waste [4]CSCP. Citrus by-products could be used as a profitable and sustainable source of natural, novel, and functional compounds/ingredients since are rich in

pectin, essential oils, phenolic compounds, vitamin C, cellulose, and other valuable compounds, which are lost when discarded as wastes [5]. Therefore, in the frame of MEDISMART Project was created a sustainable and integrative approach based on green chemistry principles to valorise two different citrus by-products (orange juice by-products and lemon peels) to promote the circular economy in citrus processing industries. The new added-value citrus-based ingredients obtained allow to achieve the zero-waste concept, responding the EU recommendations for 2030 and promoting Mediterranean economy.

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