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Editorial

Special Issue on Medicinal and Aromatic Plants: Pharmacy, Food and Nutrition

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Since the dawn of humankind, people have always turned to the natural world to meet their varied needs. Knowledge about plants that have certain effects on human health has progressed hand in hand with the development of technical and scientific knowledge, and new discoveries have been made. In recent decades, there has been a considerable increase in scientific articles on the properties of plants, and even those we have already known about for centuries are showing new remarkable medicinal properties. The knowledge of the medicinal properties of plants is very difficult to acquire, both due to the number of plants (many have not yet been studied) and for the intrinsic difficulties in testing the numerous potential biological activities of each plant. Acquiring this knowledge does not follow the piece-by-piece method of solving a puzzle. In this new era of the study of traditional plants, the scientific approach is to study each plant as an entity regardless of traditional classifications and to try to understand what its biological activities are through its phytocomplex. Given the great field of action of medicinal and aromatic plants, including fungi, this issue aims to focus on the knowledge of the biological and nutritional activities of plants that can be used in human pharmacy, food and nutrition. A total of eight papers (seven research papers and one review paper) in the varied fields of plants, pharmacy, food and nutrition are presented in this Special Issue, including protection from toxic chemical compounds, anticancer and antiproliferative activity, the isolation of phytocomplex compounds and studies on their interaction with some receptors, the environmental influence on the phytocomplex, and artifacts during the isolation of volatile compounds. Finally, mutagenic plants from Saudi Arabia were summarised in a review. Chen et al. [1] examine the uroprotective efficacy of the total ginsenosides in Chinese ginseng (TGCG) in cyclophosphamide (CYP)-induced haemorrhagic cystitis in 24 virgin female rats. These findings show that treatment with TGCG in CYP rats can avoid haemorrhagic cystitis. TGCG decreases urothelial injury, and may participate as the chief character of uroprotection in CYP-induced haemorrhagic cystitis. Chel-Guerrero et al. [2] evaluate the antiproliferative activity and modulation of the cytotoxicity of extracts obtained from *Capsicum chinense* J. These results highlight the anticancer potential of *C. chinense* by-products. Noman et al. [3] investigate the phytochemical composition of *Centaurea bruguieriana*. Antimicrobial activity is evaluated and validated using molecular docking for the major compounds of the most active fraction of *C. bruguieriana* against three bacterial receptors (TyrRS, DNA gyrase and dihydrofolate reductase (DHFR)). The results show that good affinities are made between 1,10-di-epi-cubenol and the three selected receptors. Ashaari et al. [4] reports on the essential oil distribution in *Plectranthus amboinicus (Lour.) Spreng* leaves and their total phenolic and flavonoid contents. The influence of environmental factors on γ-terpinene, p-cymene, carvacrol and thymoquinone is also discussed. Tirillini et al. [5] determine the chemical composition of VOC in the secretory trichomes of *Ocimum basilicum* and compare it with that of an essential oil obtained via the hydrodistillation of its leaves. During the distillation of the basil leaves, 26 artifacts are formed. The composition of the essential oil of *O. basilicum* therefore depends not only on the plant, but also on the method used to obtain it. El Fakir et al. [6] investigate the chemical profile, antiproliferative and antioxidant activities of methanol extracts obtained using two different methods, including maceration

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Citation: Tirillini, B. Special Issue on Medicinal and Aromatic Plants: Pharmacy, Food and Nutrition. *Appl. Sci.* **2023**, *13*, 11152. https://doi.org/10.3390/app132011152

Received: 1 October 2023
Accepted: 7 October 2023
Published: 11 October 2023

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and Soxhlet from *Berberis hispanica* Boiss. & Reut. The MTT test reveals that both extracts (maceration and Soxhlet) reduced cell viability in all tested cell lines. In breast cancer cell lines MDA-MB-231 and MCF-7, and in prostate cancer cells 22 RV and LnCap, some interesting values are obtained. The antioxidant activity shows that the studied extracts have considerable antioxidant activity (DPPH, FRAP and ABTS), with particular attention being paid to the extract obtained via maceration. Almatroodi et al. [7] evaluate the role of thymoquinone (TQ) on oxidative stress and antidiabetic and anti-inflammatory activities in streptozotocin (STZ)-induced diabetic rats. Taken together, all the findings indicate that TQ ameliorates glucose level and lipid metabolism. It restores liver function, antioxidant enzymes and anti-inflammatory markers, and maintains the architecture of hepatocytes in STZ-induced diabetes mellitus rats. Asdasq et al. [8] review some of the important plants in Saudi Arabia that might have the potential to exhibit anti-mutagenic activity.

Acknowledgments: Thank you to all the authors and peer reviewers for their valuable contributions to this Special Issue 'Medicinal and Aromatic Plants: Pharmacy, Food and Nutrition'. I would also like to express my gratitude to all the staff and people involved in this Special Issue. Finally, special thanks to the section managing editor.

Conflicts of Interest: The authors declare no conflict of interest.

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