

Editorial

Special Issue on Functional Properties in Preharvest and Postharvest Fruit and Vegetables

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Fruit and vegetables, which represent an important part of our daily diet, are rich sources of bioactive compounds. The consumption of fruit and vegetables not only provides basic nutrition for humans but also has potential health-promoting effects in reducing inflammation and preventing chronic diseases. Due to these health benefits, the accumulation of bioactive compounds and functional properties of fruit and vegetables have attracted more and more attention from researchers in horticulture. To date, although progress has been made in understanding the accumulation of bioactive compounds in plants, the elucidation of the molecular mechanisms and key regulators involved in the biosynthesis of bioactive compounds is still challenging. This Special Issue, titled *Functional Properties in Preharvest and Postharvest Fruit and Vegetables*, is aimed at elucidating the molecular mechanisms of the accumulation of bioactive compounds in fruit and vegetables.

A total of fourteen papers (ten research papers and four review papers) in various fields of horticulture are presented in this Special Issue, including such topics as the identification and accumulation of the bioactive compounds in various plant species; the effects of abiotic stresses on bioactive compound composition and content; and exploration of the best methods for bioactive compound extraction. The main achievements of the fourteen papers are listed below.

In the first paper, reported by Zafar et al. [1], the authors investigated the nutritional profile and the antioxidant, antiproliferative, and antibacterial activities of five species of *Brassica* (cauliflower, broccoli, red cabbage, white cabbage, and Chinese cabbage); they found that these *Brassica* vegetables are excellent sources of polyphenols that showed moderate antiproliferative and antibacterial potential.

In the second paper, reported by Łażny et al. [2], the effect of the bulk density and water-holding capacity of lignite substrate in comparison to mineral wool and the EC of nutrient solution on the plant morphological parameters, yield, and fruit quality of greenhouse cucumber were investigated, and the results suggest that both the substrate density and water-holding capacity positively affected the morphological features of the plants.

In the third paper, reported by Sharabiani et al. [3], an adaptive neuro-fuzzy inference system, artificial neural network, and support vector regression were used to model the infrared hot-air drying kinetics of parboiled hulls, and optimum drying conditions were obtained. The results of this study provide powerful tools to control the drying process, which contributes to preserving food and agricultural products.

In the fourth paper, reported by Karim and Yusof [4], it was found that the impregnation of spinach leaves with salicylic acid, γ -aminobutyric acid, and sucrose effectively improved the quality and storage ability by reducing chilling injury through improvement of the proline content.

The fifth paper, reported by Zhang et al. [5], is the first to investigate the in vitro biological potential of the extracts of an unexplored plant, *Rhinanthus angustifolius* subsp.



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grandiflorus, and their results suggest that *R. angustifolius* is a rich source of bioactive compounds and shows pertinent activities against key human diseases.

In the sixth paper, by Torres-Contreras and Jacobo-Velázquez [6], it is reported that abiotic stresses (wounding and temperature) induced the accumulation in potato tubers of chlorogenic acid (CGA) and CGA isomers (neo-CGA and crypto-CGA), which are phenolics that prevent and treat different chronic and degenerative diseases.

In the seventh paper, reported by Loureiro et al. [7], the authors explored the best method for the extraction of cashew gum and developed nanoparticles for the delivery and protection of α -tocopherol.

In the eighth paper, reported by Kowitcharoen et al. [8], the bioactive composition and nutritional profile were investigated in fourteen microgreens belonging to Brassicaceae, Fabaceae, Pedaliaceae, Polygonaceae, Convolvulaceae, and Malvaceae, and the results provide basic information and highlight the benefits of utilizing genetic biodiversity to obtain microgreens with the desired nutrients and antioxidants.

In the ninth paper, reported by Santos et al. [9], it was found that individual or combined application of wounding and heat treatment enhanced the content of phenols and antioxidant activity of pineapple by-products.

In the tenth paper, reported by Yungyuen et al. [10], carotenoid accumulation was investigated in the peel and pulp of mango during fruit development and ripening in three cultivars, 'Kaituk', 'Nam Dok Mai No.4', and 'Nam Dok Mai Sithong', which are different in color. Their results indicate that the differential expression of carotenoid catabolic genes is a mechanism responsible for variability in carotenoid content among the three mango cultivars.

In the eleventh paper, reported by Antony and Farid [11], the authors reviewed the effect of temperatures on polyphenols during extraction. The results suggest that thermal degradation is the most common explanation for the degradation of polyphenols and that the extraction temperature has a significant effect on the types of polyphenols being extracted.

In the twelfth paper, reported by Nunes et al. [12], the authors summarized the main phenolics in *Prunus avium* L. (Sweet Cherry) stems, leaves, and flowers as compared to their fruits and described their antioxidant and anti-hyperglycemic properties.

In the thirteenth paper, reported by Sandoval-Gallegos et al. [13], the authors reviewed the use of phytochemicals such as curcumin, silymarin, and sulforaphane in the prevention and inhibition of infection by SARS-CoV-2, as well as for the improvement of the manifestations of diabetes.

In the fourteenth paper, reported by Silvestro et al. [14], the authors summarized the preclinical studies present in the literature of the last ten years and elucidated the effects of quercetin pretreatment in stress-mediated depressive-like behavior.

The papers in this Special Issue present in-depth research into functional properties in preharvest and postharvest fruit and vegetables. We believe that these studies contribute to improving the accumulation of bioactive compounds and enhancing the nutritional and commercial values of fruit and vegetables.

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