

Editorial

# Phenolic Compounds in Fruit Beverages

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In this current special issue, different aspects related to phenolic compounds in fruit beverages are presented.

The phenolic compounds, which naturally occur in many fruit-based beverages, may affect positively or negatively the sensory characteristics of food, including fruit beverages, with important impacts on color, flavor, and astringency. Also, phenolic compounds are secondary metabolites abundant in our diet. An adequate consumption of phenolic compounds may offer health benefits. After the consumption of foods rich in phenolic compounds, such as fruit beverages, the colon is the main site of microbial fermentation. Phenolic compounds are transformed into phenolic acids or lactone structures by intestinal microbiota, which produce metabolites with biological and antioxidant activity, and evidence suggests those metabolites have health benefits for humans.

A large amount of different phenolic compounds, are responsible for physicochemical and sensory characteristics of fruit beverages. However, the phenolic composition of fruit beverages depends on several factors, namely, fruit cultivar, fruit maturity level, growing environment of fruits, cultural practices, postharvest conditions, and also processing and preservation techniques. Thus, the main goal of this special issue of *Beverages* is to present high-level research papers related to the phenolic composition of fruit beverages.

This special issue is composed of nine different works written by a group of international researchers in order to provide up-to-date reviews and current research on the different dimensions of phenolic compounds in fruit beverages. Thus, three interesting reviews are published by Canas [1], Ricci et al. [2], and Cosme et al. [3]. The first work discusses the influence of wood barrel characteristics, namely the botanical species of the wood and the toasting process that wood undergoes during the cooperage management. In particular, that work focuses on the impact of wood barrel composition on phenolic content of distilled wine spirits. The second review addresses the topic of the application of pulsed electric fields (PEF) on the red winemaking process, especially to improve the polyphenolic extraction and color release. Authors reported on data from several different PEF experiments in relation to grape varieties and process parameters, particularly on phenolic composition of red wines. Finally, the third review by Cosme et al. [3], focuses on grape juice phenolic composition, with a special focus on the potential beneficial effects on human health and on the grape juice sensory impact. In that work, several points are addressed, namely: grape juice production and phenolic composition, biological activity of phenolic compounds present in grape juices, and the impact of phenolic composition on sensory characteristics of grape juices.

The six remaining papers present current research in different dimensions of phenolic compounds from different fruit beverages. In this context, the work from Makebe et al. [4] analyzed optimization of the juice extraction process on must fermentation of overripe giant horn plantains by the use of an enzymatic extraction process and the impact on chemical composition of the wine produced, including total polyphenols and flavonoid content. In addition, the impact of the presence of phenolic compounds in the antioxidant activity of the produced wine also were studied. The second research

paper from Zhang et al. [5] studied the application of poly-3,4-ethylenedioxythiophene (PEDOT) electrodes for the characterization of polyphenols in white wines. In that case, a Chardonnay white wine was used. According to these authors, the use of PEDOT electrodes showed considerable promise for applications in electroanalytical chemistry, based on their responsiveness to oxidizable substrates, such as wine polyphenols.

The antimicrobial and health-promoting activities of phenolic compounds are well known. Thus, Sabel et al. [6] studied the potential impact of a selection of phenolic compounds (which included hydroxybenzoic and cinnamic acids, stilbenes, and hydroxybenzaldehydes) on growth and viability of wine yeasts, and lactic and acetic acid bacteria. In addition, several factors that could determine the inhibitory effect of phenolic compounds—namely enzymatic oxidations, pH, and organic solvents—also were studied. The results obtained confirmed the antimicrobial activities of ferulic acid and resveratrol and showed the important role of syringaldehyde as an antimicrobial agent. The research work by Porto et al. [7] evaluated the physicochemical stability, antioxidant activity, and acceptance of a beet/orange juice during refrigerated storage. According to those authors, it was evident that the mixture of beet and orange juice contributed to an increase of juice stability, in particular as a result of high total phenolic compounds and antioxidant capacity.

Another work, by Stein-Chisholm et al. [8] analyzed the impact of rabbiteye blueberry juice processing on phenolic composition, in particular anthocyanin content. Those authors, using LC-MS/MS, identified and semi-quantified the major and minor anthocyanins at various steps of the juice production process. The results obtained showed that 10 major and 3 minor anthocyanins were identified in blueberry juice during the production process. In addition, it was also clear that increasing the number of steps in production induced a greater loss of anthocyanins in the final juice produced. For the last research work, Aguilar et al. [9] reported on sustainability. They characterized an antioxidant-enriched beverage made partly from grape musts and extracts of winery and grapevine by-products. Those authors try to find a novel functionality for grape pomace, grapevine leaves, and canes through their reuse as a functional matrix for the extraction of antioxidants. According to the results obtained, grape pomace and grapevine leaves are an important source of additional polyphenols in the preparation of enriched grape juice.

It was with great pleasure that I accepted the opportunity offered by MDPI, the publisher, to coordinate and serve as the guest editor of this special issue of *Beverages* regarding the theme of *Phenolic Compounds in Fruit Beverages*. I am greatly indebted to the authors who have generously shared their scientific knowledge and experience with others through their contribution to this special issue.

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

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