

Editorial

Wide World of Beverage Research: Reviews of Current Topics

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In 2015, the journal *Beverages* (ISSN 2306-5710) was launched to provide insight into the beverage industry. After five years, to celebrate this anniversary, we are delighted to present a Special Issue on the topic of “Wide World of Beverage Research: Reviews of Current Topics”. This Special Issue gathers seventeen articles that cover a wide range of beverages such as wine, beer, functional beverages, fruit juices, alcohol-free beverages, fermented functional beverages, fortified wines, and beverages containing probiotics, prebiotics, and symbiotics.

The increasing demand for and interest in alcoholic beverages has been explored [1] by Young and Lee who have provided information to researchers and industries on factors influencing consumer wine perception after reviewing sensory studies on wine published over the past 10 years. This review put in evidence the need to perform studies that achieve new insights into consumers and to deeply explore the relationship between wine quality and actual consumer perception. Another interesting review [2] explored the role of the so-called “cork taint” due to the presence of musty and moldy taint. The author analyzed the role of different molecules responsible for this defect and also added information about the possible prevention or remedial treatments to cork taint. Once again, the author considered it desirable to conduct new studies focused on the prevention of this important wine defect. In terms of food safety, Schmid and Welle [3] analyzed beverage packaging such as PET bottles, glass bottles, metal cans, and cardboard multilayers to assess a potential migration of some compounds from the different materials reported, especially considering European food law with its specific migration limits and testing conditions. They conclude that the current literature review of chemical migration from beverage packaging materials did not reveal any critical compounds. The migration tests carried out during shelf life did not show values above the specific migration limits.

Wine traceability and authenticity needs tools to be able to give to consumers this important information. In the review [4], the authors explored the role of a simple, fast and cost-effective way, FT-IR spectroscopy, to analyze different components without the need for chemicals or preparatory steps. This successful technique could be tested and potentially implemented, as suggested by the authors, by constructing a larger database with wines of different geographic region and produced with different varieties and technological processes.

Kessler et al. [5] examined the role of automated facial expression analysis (AFE) on beverages. Despite the huge diversity in the literature about the methods used in the AFE, these authors evidenced clear benefits to using AFE in product and package development, leading to a more comprehensive understanding of the consumer.

Mellor et al. [6] focused their review on the potential health benefits of low-alcohol and alcohol-free beer. Hops, polyphenols and phenolics, and prebiotics and probiotics were explored as well as the effects of brewing and maturation processes. The aim of the review was to evidence the potential healthy role of beer without alcohol or with a low alcohol content. The review underlined the importance of innovation in increasing beer palatability, maximizing healthy effects, and minimizing the potentially harmful effects of alcohol consumption.

Functional beverages are an emerging topic of the last years. In this context, Cong et al. [7], with their review, have provided information about legislation to the scientific



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community on differences among different countries of the Asia Pacific region. Moreover, they suggest promoting new research on consumer-oriented studies on functional beverages. Within the same topic, another review [8] explored the world of probiotics and their survival and performance in beverages. Again, the effect of different technological stresses on their resistance was reported. Another important topic in wine is protein instability. Cosme et al. [9] gave an overview on the different aspects involved in wine protein instability and reviewed the technological alternatives useful to stabilize wines with problems of protein instability. This topic was further explored by the analysis of the advantages and disadvantages of protein stability tests and by strategies used to control this instability. An overview of the recent developments of membrane operation with the aim to clarify or concentrate and recuperate aroma compounds in fruit juice processing was explored by Conidi et al. [10]. They highlighted the optimal role of microfiltration and ultrafiltration operations on the fining step of the juice processing, especially in terms of low energy requirements, the reduction of thermal damage and waste products, and finally, the ease of cleaning and maintenance. The chemical and toxicological effect of the biogenic amines present in alcohol-free beverages was also summarized [11]. Its importance is due to the increasing consumption in recent years of alcohol-free beverages. This fact implies an ongoing monitoring of drink quality both to protect human health and to monitor all of the production chain. Kim and Adhikari [12] provided to the scientific community an overview of the market for “Kombucha”, which is a recently popular fermented functional beverage produced by symbiotic bacteria and yeasts. This review pointed out its importance as a low-calorie- and low-sugar-content beverage, although the authors underlined the scarce literature present on the sensory and consumer perception for this product. They invited the scientific community to promote new research in this field. An important review was made by Perestrelo et al. [13] on Madeira wine, a fortified wine with an important impact on the Madeira island economy. The volatile and non-volatile profile was depicted very deeply by analyzing more than 150 different papers that make it possible to gain a complete overview on this type of wine. The possibility to produce beverages to promote endurance performance by supplementing them with arginine and citrulline, with potential additional physiological benefits, was explored by Speer et al. [14]. In this review, the authors reported the range of arginine and citrulline concentrations used, assessed the effects of both amino acids (individually or in combination) relating to performance outcomes, and considered the possibility to provide these supplements in the form of a beverage. They concluded that further research is needed, especially to modulate the release of these amino acids pre-, during, and post-endurance performance. The literature on traditional fruit and vegetable fermented beverages and new trends, the diversity of lactic acid bacteria (LAB), and how the processing steps can affect the LAB was examined [15]. The main findings were that LAB-fermented fruit and vegetable beverages may provide benefits for metabolic disease management, and the encapsulation or addition of antioxidants have a crucial role in maintaining probiotic LAB viability. The last review [16] of this Special Issue summarized the pros and cons of different approaches, reported in the literature, to design new yeast for craft brewing. The authors stressed the important role of new strategies such as the use of non-conventional yeasts or of *S. cerevisiae* natural variants from alternative biorepositories that can significantly enrich the beer aroma profile. Again, they found that the novel discoveries on the genomic signatures of brewing relevant phenotypes can enhance innovation in beer starter culture selection. This Special Issue ends with a perspective [17] on the therapeutic performance and properties of dairy and non-dairy beverages in terms of probiotic, prebiotic, and symbiotic activities. This exhaustive perspective put in evidence that the effects of probiotics in many diseases have not yet been fully investigated, and their mechanisms of action for promoting health and controlling disorders needs further investigation.

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