

Resveratrol encapsulation

Resveratrol is a polyphenol from the stilbens family that has been reported to have various benefits for human health, including antioxidant, anti-inflammatory, anti-carcinogenic, anti-obesity, and heart/brain protective effects. However, the utilization of resveratrol as a nutraceutical in the food industry is currently limited due to its poor water solubility, high chemical instability, and low oral bioavailability. Encapsulation of resveratrol can be used to improve its water-dispersibility, chemical stability, and bioavailability. On page 88, Gabriel Davidov-Pardo and David Julian McClements review delivery systems available to encapsulate, protect and release resveratrol, and highlight their potential applications within the food industry. This review has highlighted a number of food-grade colloidal delivery systems that may be suitable to encapsulate resveratrol and overcome these challenges, and the appropriate delivery system for a particular application depends on a number of factors. First, it should be possible to prepare the delivery system from food-grade ingredients using a robust, reliable, and inexpensive manufacturing operation. Second, the delivery system should not adversely affect the quality attributes of the product (such as appearance, texture, and flavor) and should remain stable throughout the expected shelf life of the product. Third, the delivery system should have high encapsulation and retention efficiencies. Fourth, the delivery system should be capable of protecting and releasing resveratrol within the gastrointestinal tract to ensure high oral bioavailability. Each type of delivery system has its own advantages and disadvantages that make it more or less suitable for different applications. Future research efforts could focus on combining encapsulation techniques to achieve a greater effect on increasing

the solubility, stability, and bioavailability of resveratrol. Combinations of techniques may also improve the properties of the capsules, as well as, increasing the amount of resveratrol that can be loaded into them. Finally further work is needed to explore the incorporation of different types of resveratrol delivery systems into food products. It is important to evaluate the impact of food matrices on the stability of capsules and resveratrol, as well as the effect of the capsules on the physicochemical and sensory properties of the food product.

Temporal dominance of sensations

Food and beverages undergo a series of physical and chemical reactions during mastication, salivation and so on, moreover the perception of aroma, taste, flavor and texture changes too. Thus, conventional static sensory methods, which require judges to average their dynamic sensations and give only a single point evaluation, are bound to miss some significant product information. To overcome this drawback, different dynamic sensory methods have been developed and refined. On page 104, Rossella Di Monaco and co-workers focus on temporal dominance of sensations (TDS), a relatively new dynamic sensory methodology. Despite the fact that TDS has never been applied to studies of food appearance or orthonasal-odor properties, the technique has proven to be less time-consuming than time-intensity and conventional sensory profiling. In addition, it provides supplementary information on the sequence of sensations and qualitative changes perceived during the food consumption process that are not measurable with TI or conventional sensory analysis. The efficiency of TDS in distinguishing weak-sensory difference samples and describing the evolution

of different sensory perceptions (texture, taste and aroma) during and after food consumption have been evidenced by studies on complex products that arouse dynamic sensory. Furthermore, TDS is believed to be more appropriate to explain consumer responses than static descriptive analysis due to its temporal element. In addition, the dynamic information from TDS may contribute to the understanding of liking drivers. Besides, it is noteworthy that even though liking was a temporal phenomenon, only few researchers attempted its measurement through a temporal procedure. It is not difficult to say that TDS is a very useful sensory methodology when taking into account all its advantages and the ever increasing need to acquire temporal sensory information on food products. However, it is necessary to investigate it together with more kinds of product to explore the application scope of TDS.

Fermented beverages with health-promoting potential

Fermentation is an ancient form of food preservation, which also improves the nutritional content of foods. In many regions of the world, fermented beverages have become known for their health-promoting attributes. In addition to harnessing traditional beverages for commercial use, there have recently been innovative efforts to develop non-dairy probiotic fermented beverages from a variety of substrates, including soy milk, whey, cereals and vegetable and fruit juices. On page 113, Paul D. Cotter and co-workers review traditional fermented beverages with reputed health benefits, and explore recent trends and developments in this field, as well as areas for future research. Most of the beverages described in this review are still in the early stages of commercial

development, and require further extensive sensory, physical and chemical characterization to develop a palatable flavor profile and viable product. In terms of traditional fermented beverages, there is still a great deal to be understood. First and foremost, there needs to be a consensus with respect to what constitutes the natural microbiota of specific beverages, a description of which are essential for fermentation, and the contribution of each microbe to the final beverage composition. Also important is the characterization of the relationship between microorganisms, particularly between bacterial and yeast populations, as well as the influence of containers, substrates, metabolites and enhancements on the organoleptic qualities and fermentation kinetics need to be evaluated. Fortunately, technology is advancing such that sensitive techniques can now be used in an increasingly cost effective manner to provide greater insight. Critically, there is increasing pressure to identify and confirm proposed health claims for the consumer. The role of traditional beverages in the future of the fermented beverage industry may be to inspire the development of new products (and assess a country's willingness to accept a product), whereby it is easier to develop simple, novel beverages and directly evaluate the functional and sensory properties in controlled fermentations with minimum variables. Indeed, this is a key hurdle in the marketing of such products, especially in light of increasing awareness amongst consumers and the emergence of strict legislation. Considering the costs of development and clinical trials, innovation in the functional food market may need to become a collaborative effort between industry partners and academia. Nonetheless, this is an exciting time for beverage development. Advances in probiotic (including yeast species) discovery and characterization will advance the possibilities for health claims and starter design. The milk sector has already seen great success in this regard, and as probiotics is intrinsically linked to the health

claims of many beverages it is natural to assume this will extend to other varieties of beverages to hit the market, with success already seen with probiotic soy beverages, and exciting developments with juice beverages. This is particularly true as the importance of gut health to our well-being becomes increasingly apparent. As our knowledge and discovery of probiotics increases, there will be a need for alternative means of probiotic delivery. Additionally, as research into the fermentation of waste and by-products products (e.g. whey) continues, there is the potential for a significant environmental impact. As developed society becomes more health-conscious, particularly in response to the growing obesity epidemic, the market for functional food appears to be in a long-term, sustainable trend, with beverages constituting a substantial share of this market. Aside from marketing to health-conscious (and high income) consumers, there is evidence that functional beverages could function as a therapeutic product, particularly as a means of delivering nutrition to, and improving the health of, malnourished populations. This medicinal impact may also be augmented by the growing field of nutraceuticals, addition of cholesterol-controlling factors, and in terms of probiotics, the alleviation of intestinal discomfort and aiding in the recovery from antimicrobial treatment. One aspect that cannot be underestimated in the development of beverages is the need to accurately assess the market potential for the product. The obvious hurdle is consumers' willingness to accept an unfamiliar product, and the right combination of starters and substrates, optimum nutrition and flavor development and scientifically-supported health benefits need to be carefully considered. It has been shown that taste, price and base nutritional composition are more important than functional properties. Consumers perceive products that are intrinsically healthy such as yoghurt, fruit juices and cereal as preferable carriers of functional foods, reflected in the increase in the study of these food types,

and which may allow developers to exploit natural mineral and vitamin content of foods and juices already perceived to be healthy. In conclusion, fermentation is an ancient form of bio-preservation that is common to all regions of the world. With traditional milk-fermented products currently enjoying success in many markets, there is an increasing interest in functional beverages from a scientific, consumer and commercial perspective. There is a movement in the modern consumers' selection of foods that offer health, social and environmental benefits, which has encouraged the food industry to develop new products and market strategies. The functional beverage market is still small and fragmented in most European countries, but it is expected that this area will see much success in the coming years. Indeed, with the availability and improvements in technology, and consumers' increasing interest in functional foods, the outlook for fermented beverages is more promising than ever.

Carotenoid bioaccessibility in fruit- and vegetable-based foods as affected by product (micro) structural characteristics and lipids

Carotenoids are important micronutrients and specific health benefits have been associated with the consumption of food products rich in carotenoids such as fruits and vegetables. However, given their hydrophobic character, the uptake of carotenoids from food products is generally quite low. On page 125, Marc Hendrickx and co-workers review recent studies on fruits and vegetables in which specific product characteristics, i.e. (micro) structural characteristics and the presence

Download English Version:

<https://daneshyari.com/en/article/2099808>

Download Persian Version:

<https://daneshyari.com/article/2099808>

[Daneshyari.com](https://daneshyari.com)