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Editorial

Natural hydrocolloids in the food sector – Recent applications beyond conventional usesAhmet Yemenicioğlu,¹ Stefano Farris,² Meltem Turkeyilmaz,³ & Sukru Gulec^{1,4}

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In food industry, natural hydrocolloids have been extensively used to increase the functionality of different food products such as beverages, bakery and confectionery, sauces and dressings, and meat and poultry. Conventional applications of hydrocolloids in the food industry are still based on their rheological and surface-active properties (Dickinson, 2018; Nishinari *et al.*, 2018; Yousefi & Jafari, 2019). However, recent developments in the hydrocolloids sector fuelled by sophisticated market demands and emerging new technologies expanded the applications of hydrocolloids beyond their conventional uses. For example, extensive studies conducted to improve stability and controlled release properties of bioactive agents, probiotics and nutrients using hydrocolloids as encapsulating systems, eased and encouraged the development of many novel functional food products. Hydrocolloids tailored/modified by different physical, chemical and biological methods or applied with novel strategies also start to play a central role in the development of more functional (or even multi-functional) food ingredients, better performing encapsulating devices and advanced coating and packaging materials (e.g. with superior barrier, mechanical, active, controlled release and visual properties). A number of new strategies and methods are available to scientists and workers using natural hydrocolloids for food applications. However, both current industrial trends and extensive literature survey suggest that next innovation will go along five main pathways: (i) screening of agro-industrial wastes to discover alternative hydrocolloids showing unique functional properties or free from chronic problems associated with some classical hydrocolloids (e.g. limited resources, health problems, religious concerns and rejection by vegans.); (ii) using hydrocolloids in nanotechnology to develop advanced coating, packaging and encapsulating materials (applications with nano-sized cellulose, chitin, starch, milk proteins,

etc.); (iii) combining different hydrocolloids to boost their functionality; (iv) exploiting interactions of natural hydrocolloids with different food components (especially with phenolic compounds); and (v) employing natural hydrocolloids as food ingredients to improve health benefits and nutritive value of food (use of pectin, inulin, β -glucan, resistant starch, milk and whey protein concentrates, etc.; Yemenicioğlu *et al.*, 2019).

The scope of this special issue is to present current and potential future applications of food hydrocolloids in the food sector through high-quality research articles in the field. In particular, current and future trends in selecting sources of extraction and technological applications of hydrocolloids as well as recent developments related to their health effects have been discussed in a detailed review paper authored by the guest editors (Yemenicioğlu *et al.*, 2019). Two articles related to emulsion-based films of pectin (Çavdaroğlu *et al.*, 2019) and gelatin (Dammak & Sobral, 2019) with eugenol, and an article related to eugenol and linalool retention capacities of hydrogels from guar and xanthan gums (Kopjar *et al.*, 2019) clearly proved the significant research interest in functional and active (antimicrobial and antioxidant) hydrocolloid–volatile polyphenol mixtures. Additional articles of the special issue are related to hot-topic areas of hydrocolloids research such as discovery of novel functional properties (e.g. emulsification, gelation and rheological properties), possible dietary effects, nanotechnology applications, tailoring of functional properties via non-thermal methods, combinational applications, edible oleogels, probiotic edible films and interactions with food components. By providing the most up-to-date information on hydrocolloids at both basic to advanced levels, this special issue can be of great interest for researchers from academia and industry, as well as students, practitioners and

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1 experts that are (or will be) involved in the field of
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