

## Book review

**C. G. Biliaderis, M. S. Izydorczyk (Eds.), *Functional Food Carbohydrates*, CRC Press, Boca Raton, FL, USA, 2007, (xii + 570 pp., £79.99, ISBN: 0-8493-1822-X)**

'Carbohydrates' is a general term that includes the smallest simple sugars, namely monosaccharides, larger molecules composed of several (generally 2–10) monosaccharide units, namely oligosaccharides, and complex molecules composed of many monosaccharide units, namely polysaccharides. For many years, carbohydrates were considered as uninteresting second class citizens, compared with proteins and nucleic acids. The predominant factors which have made radical changes to this now historical classification have been the realisation that carbohydrates play important physiological roles in human metabolism, and furthermore they are an essential and unavoidable part of human diet and nutrition. *Functional Food Carbohydrates* is part of the 'Functional Foods and Nutraceuticals Series' that has been developed to provide updated information on aspects of food science related to nutrition and health in order to prevent or avoid disease, the aim of this volume being principally to point out the physiological and metabolic roles that different carbohydrate compounds have on diseases including cancer, diabetes, osteoporosis and gastrointestinal disorders.

The volume is essentially divided into three parts, the first of which provides a historical overview of the physico-chemical characteristics (extractability, structures, solubility, molecular weight, conformation, viscosity, etc.), physiological functions and properties of selected carbohydrates including cereal  $\beta$ -glucans, resistant starch, konjac glucomannan, seed polysaccharide gums, microbial polysaccharides, chitosan and arabinoxylans (Chapters 1–7). Specific seed polysaccharide gums discussed include locust bean gum, guar gum, tara gum, fenugreek gum, tamarind seed xyloglucan, soluble soybean polysaccharides (soya fibre), psyllium mucilage, flaxseed gum and yellow mustard gum. Specific microbial polysaccharides presented include  $\beta$ -D-glucans such as curdlan, glomerellan, grifolan, lentinan, pachyman, pestalotan, schizophyllan, scleroglucan, tylopilan and extracellular polysaccharides (EPS) from lactic acid bacteria (LAB). Where appropriate, information on biological activities, such as hypocholesterolaemic and hypoglycaemic effects and antibacterial/antifungal properties, is provided.

The second part of the volume (Chapters 8–14) provides detailed information on the effects of food carbohydrates

on human health, specifically their roles in risk, prevention and management of cardiovascular disease, obesity, cancer, type 2 diabetes, mineral metabolism, mood and performance modulation, and gastrointestinal tract function, respectively. For example, the risk of cardiovascular disease is closely linked to plasma triglyceride levels and thus to dietary carbohydrate content. Increased consumption of dietary fibres (such as psyllium, pectin, guar gum and locust bean supplement) has a positive effect on the reduction of plasma cholesterol levels. The recurring conclusion in all of these chapters is that the excessive consumption of refined carbohydrates has a detrimental effect on health, whereas increased dietary fibre consumption appears to be protective.

The final part of the volume (Chapters 15–17) presents an examination of using carbohydrates with specific technological aspects as functional ingredients in food systems. This begins with discussion of epidemiological studies concerning the increased occurrence of antibiotic-resistant pathogens involved in gastrointestinal diseases, and microbial management strategies involving the consumption of probiotics, prebiotics and synbiotics, in order to avoid gastric disorders. This is followed by discussion of the use of pectin, starch, maltodextrins, syrups and starch derivatives as stabilisers and encapsulation matrices for the controlled delivery of bioactive substances. The final chapter is concerned with food regulations, specifically health claims for foods fortified with carbohydrates or other functional foods/nutraceuticals. Information on the Japanese, US, Canadian and European Union regulations is provided.

In conclusion, this is an excellent volume providing an abundance of thoroughly referenced information on this constantly expanding area of food science. It is therefore highly recommended to all individuals involved in any aspect of functional food research and new product development.

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