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oat -glucan; 3.4 Effects of processing on oat -glucan; 3.5 Oat and health; 3.6 Conclusions; References; 4 Nutraceutical properties and health benefits of rice; 4.1 Introduction; 4.2 Rice grain structure and nutritional composition distribution; 4.3 Nutrient compositions and their health benefits; 4.4 Biofortification of nutrients in rice grain to improve its health benefits; 4.5 Health benefits of rice bran 4.6 Health benefits of whole rice grain consumption 4.7 Future trends; References; 5 Hypolipidemic effects of rice bran oil; 5.1 Introduction; 5.2 Chemical composition of rice bran oil (RBO); 5.3 Hypolipidemic effect of rice bran oil; 5.4 Other beneficial effects of rice bran oil; 5.5 Future studies; References; 6 Phenolic phytochemicals from rye (*Secale Cereale* L.); 6.1 Introduction; 6.2 Three classes of the phenolic compounds; 6.3 Extraction methodology; 6.4 Analysis methods; 6.5 Bioactivity; 6.6 Health beneficial effects of rye intake; 6.7 Summary; References; 7 Bioactive compounds in corn 7.1 Introduction 7.2 Phytochemicals in corn and their health benefits; 7.3 Corn resistant starch and bioactivities; 7.4 Future studies; References; 8 Nutraceutical and health properties of adlay; 8.1 Introduction; 8.2 Health components of adlay; 8.3 Potential health beneficial properties; 8.4 Summary; References; 9 Antioxidant and health promoting properties of wheat (*Triticum* spp.); 9.1 Introduction; 9.2 Evidence of wheat's health promoting properties; 9.3 The antioxidant contents of wheat; 9.4 Reported antioxidant and other health promoting properties of wheat 9.5 Bioavailability of phenolic acids in wheat 9.6 Use of post-harvest treatments to improve the bioaccessibility of antioxidant in wheat-based ingredients; 9.7 Effects of processing on antioxidants in wheat-based food systems; References; 10 Buckwheat: A novel pseudocereal; 10.1 Introduction of buckwheat; 10.2 Nutritional composition of buckwheat; 10.3 Unique health components of buckwheat; 10.4 Allergens in buckwheat; 10.5 Research trends of buckwheat nutritional and functional properties; References; 11 Nutraceutical and health properties of psyllium; 11.1 Introduction 11.2 Health beneficial effects of psyllium

Sommario/riassunto

Cereal and pulse crops are staple foods that provide essential nutrients to many populations of the world. Traditionally, whole grains were consumed but most current foods are derived from refined fractions of cereal and pulse crops. Consumption of processed or refined products may reduce the health benefits of food. In wheat-based processed foods, for example, the removed 40% of the grain (mainly the bran and the germ of the wheat grain) contains the majority of the health beneficial components. These components, particularly non-essential phytochemicals such as carotenoids, polyphenols, phyt
