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Sinopsis

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This important collection reviews technologies for producing a wide range of cereal products with different health-promoting properties and more acceptable sensory quality. Part I discusses the health effects of cereals, with chapters on topics such as whole grain foods, cereal micronutrients and resistant starch. Consumer perception of health-promoting cereal products and regulatory and labelling issues are also described. Part II focuses on technologies to improve the quality of functional cereal products, reviewing issues such as grain improvement, novel cereal-derived ingredients and formulation of low GI products. Chapters dedicated to a wide range of product types are also included, covering cereal foods made from oats, rye, barley and speciality grains and breads fortified with vitamins and minerals, soy and omega-3 lipids among others.

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PART 1 INTRODUCTORY ISSUES

Consumers and functional cereal products

M Dean, M M Raats and R Shepherd, University of Surrey, UK

- Why is it important to understand consumer perceptions? Consumption of grain-based foods
- Perceived barriers to eating wholegrain products
- Interventions to increase intake of grain-based foods
- Functional cereal products
- Consumer perceptions of functional grain products
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Labeling and regulatory issues related to functional cereal products

K Schmitz, L Marquart, University of Minnesota, USA and J Willem van der Kamp, TNO Quality of Life, The Netherlands

- Introduction

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- Whole grain definitions and health claims - current and emerging issues
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Fiber, whole grains and disease prevention

J Miller Jones, The College of St. Catherine, USA

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- Fiber, whole grains and cardiovascular disease
- Fiber, whole grains, and the colon and digestive tract
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Resistant starch and health

A M Birkett, National Starch Food Innovation, USA and I L Brown, University of Wollongong, Australia

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- Health effects of resistant starch
- Resistant starch for food development
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Micronutrients in cereal products: their bioactivities and effects on health

A Kamal-Eldin, Swedish University of Agricultural Sciences, Sweden

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Whole-grain consumption and insulin sensitivity

M A Pereira, University of Minnesota, USA

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- Experimental evidence - clinical investigations and controlled trials
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M Champ, INRA, France

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PART 2 TECHNOLOGY OF FUNCTIONAL CEREAL PRODUCTS

Improving the nutritional quality of cereals by conventional and novel approaches

P R Shewry, Rothamsted Research, UK

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- Technologies for grain improvement
- Improvement of protein quality
- Developing resistant starch
- Improving dietary fibre composition
- Increasing vitamins and minerals
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Novel high fibre and whole grain breads

C Collar, Consejo Superior de Investigaciones Científicas, Spain

- Introduction
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- Novel high fibre and whole grain breads
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- Particular difficulties in the development of high fibre and whole grain white breads: effects of formulation and processing technology
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Oat bread and other oat products

A Kaukovirta-Norja and P Lehtinen, VTT, Finland

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- Basics on oat
- The range of oat food products
- Bioactive compounds and health benefits of oat and oat products
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Rye bread and other rye products

A Kamal-Eldin, P. Åman, Swedish University of Agricultural Sciences, Sweden, J-X Zhang, University of Umeå, Sweden, K-E Bach nudsen, Danish Institute of Agricultural Sciences, Denmark and K Poutanen, University of Kuopio, Finland

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- Chemistry and properties of rye grain nutrients and bioactive compounds
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Functional barley products

A Andersson and P Åman, Swedish University of Agricultural Sciences, Sweden

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J R N Taylor and M N Emmambux, University of Pretoria, South Africa

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Vitamin and mineral fortification of bread

C M Rosell, Instituto de Agroquímica y Tecnología de Alimentos (IATA-CSIC), Spain

- Introduction: vitamin and mineral fortification of bread
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C Hall III and M C Tulbek, North Dakota State University, USA

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Y Vodovotz, The Ohio State University, USA

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- Effect of soy addition on staling (firming) of bread
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Inulin in bread and other cereal-based products

D Meyer, Sensus, The Netherlands and J de Wolf, Cosun Food Technology Centre, The Netherlands

- Introduction: trends in food consumption and product development
- Inulin: structure, occurrence and general properties
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High-fibre pasta products

C S Brennan, Massey University, New Zealand

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- Pasta origins and importance as a food commodity
- Typical composition of pasta and noodles
- Pasta and Glycaemic Index
- The influence of pasta processing on pasta structure
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Functional cereal products for those with gluten intolerance

E K Arendt and F Dal Bello, National University of Ireland, Ireland

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- Difficulties in producing gluten-free breads
- Ingredients suitable for gluten-free bread production
- Improving the quality of gluten-free bread
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Converting oats to high-fibre products for use in functional foods

G E Inglett and D G Stevenson, U.S. Department of Agriculture, USA and S Lee, Sejong University, Republic of Korea

- Introduction: Health benefits of functional high-fibre oat products
- Isolating and concentrating oat beta-glucans using solvent extraction methods
- Isolating and concentrating oat beta-glucans using milling methods
- Isolating and concentrating oat beta-glucans using alkaline and acidic extractions
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Improving the use of dietary fibre and other functional ingredients to lower the GI of cereal products

S K Patil, S K Patil and Associates, USA

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- Glycemic Index (GI) and Glycemic Load
- Carbohydrate digestibility
- Dietary fiber and GI
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- Effects of processing on the properties of dietary fiber ingredients and formulation challenge
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Methods to slow starch digestion rate in functional cereal products

G Zhang, M Venkatachalam and B R Hamaker, Purdue University, USA

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- Starch structural modification
- Influence of other food components on starch digestion rate
- Slowly digestible starch and low glycemic index cereal foods: future trends
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