

techniques in the design of safe and biologically contained transgenic plants have been summarized in the concluding chapter of the book.

The technology and theories behind different recent bioprocesses are clearly explained in this volume and this can serve as an excellent source of information for all individuals interested in the application of biotechnology and genetic engineering in the production of novel products.

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**F. Gaedcke, B. Steinhoff and H. Blasius, editors. Herbal Medicinal Products, Medpharm, Stuttgart, Germany, CRC Press, Boca Raton, USA, 2003 (xiii + 177 pp., \$47.96, ISBN 3-88763-098-X and ISBN 0-8493-1023-7)**

Herbal medicinal products are becoming more widely accepted as alternatives to medicinal prescriptions, due to growing awareness among peoples towards health and natural therapies. According to a study on the use of natural medicines which is performed regularly by German Institute of Demoscopy Allensbach, about two-thirds of German population prefer medicines from natural resources to chemically defined medicines.

There are often uncertainties about the interpretation of basic terms related to manufacture, quality and correct labelling of herbal medicinal products. This book on Herbal Medicinal Products clarifies these uncertainties, increasing transparency in the herbal medicinal products market and supporting an adequate scientific discussion related to herbal medicinal products. The book has 11 colour photographs, 37 figures and 30 tables. After a compilation of basic definitions, it describes the rules for correct labelling of herbal drug preparations in the subsequent chapter.

In the case of herbal medicinal products, the herbal drug or herbal drug preparation in its entirety represents the active substance. The quality of the herbal active substance must be assured in a way that consistent therapeutical success is guaranteed from batch to batch. Chapter 3 of the book focuses on this important aspect, i.e. quality assurance of herbal medicinal products, which include quality assurance of herbal starting material, herbal extract

and the finished herbal medicinal product. The legal provisions relating quality and safety of herbal medicinal products are discussed in the individual chapters.

An overview of the European marketing authorisation system is given in chapter 5, which covers the topics on directives relating to medicinal products, centralised, decentralised and national procedure, herbal medicinal working party and future of marketing authorisation. The book provides summarized information on the herbal medicinal products worldwide in the concluding chapter. The activities of the World Health Organization in relation to herbal medicines are also addressed.

It is hoped that this book may serve as a guideline for pharmacists, drug experts, students and all concerned with herbal medicinal products in industry, research, universities, regulatory offices and health authorities. It can also serve as a practical handbook for the qualitative assessment of individual products in pharmacies and medical practice.

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**N.J. Russell and G.W. Gould, editors. Food Preservatives 2nd Ed., Kluwer Academic/Plenum Publishers, New York, USA, 2003 (xv + 380 pp., £99.00, ISBN 0-306-47736-X)**

The preservation of food has been carried out by man using various means for many hundreds of years in order to ensure a supply between growing seasons. Developments in food processing also have an influence on the use of food preservatives. As demand has increased for a wider range of different, often processed products, and with longer shelf-lives, chemical preservatives have become widely used. Different preservatives achieve best results under different conditions, so the food industry has the opportunity to select the most appropriate preservative for the function required. However, the current trend is to use minimal use of chemically preservative, which has implications for the storage and safety of food products.

The problems in food preservation may be caused by wide range of reactions such as physical, chemical, enzymatic and microbiological. These various reactions are, therefore, targets for effective food preservation. They may be prevented or minimized by a range of formulation,

processing, packaging and storage techniques including the use of additives, in particular to interfere with oxidative chemical reactions and to prevent or delay microbial growth. Of all the quality loss reactions of foods, the microbiological ones are the most important from the economic and consumer safety viewpoint. Microbiological problems associated with foods have generated much public concern, and the dangerous pathogens are now becoming a new focus for food and consumer safety. At same time, new methods of preservation such as high pressure processing are being introduced and these may well benefit from the selective use of antimicrobial preservatives, particularly in new combinations with the new and existing techniques.

Food preservatives are employed principally to prevent spoilage during storage and throughout distribution, retailing and use by the consumers. Therefore, the targets of food preservatives are those microorganisms that are able to multiply and eventually spoil the food. At the same time, preservatives may help to ensure safety by inhibiting the growth of any infectious or toxinogenic microorganisms that may be present.

The first introductory chapter summarizes the major groups of microorganisms responsible for food poisoning and major preservation technologies are covered in the second chapter. The detailed information about different preservatives, their mechanisms of action and their uses have been given in the proceeding chapters. The different topics not only cover the basic modes of action of chemical preservatives, but also their application as antimicrobial additives in the food industry. Water activity, which greatly influences the multiplication, metabolic activity, resistance, and survival of the microorganisms, has been discussed in separate chapter.

Bacteriocins are low molecular weight antimicrobial peptides produced by bacteria that are inhibitory to other bacteria, which are usually closely related to the producer bacteria. Numerous bacteriocins have been discovered particularly over 15 years, however, nisin has been known to possess a broader antimicrobial spectrum than most other bacteriocins and has proven success as a food preservative. The stability, antimicrobial spectrum, mode of action, toxicological studies, practical applications and protein engineering of nisin has been explained in chapter 8.

The prevention of mold growth is an important issue for the food industry because economic losses due to fungal spoilage of foods can be considerable. Natamycin at low concentrations is effective against nearly all molds and yeasts. The physical and chemical properties, mechanism of action, applications and regulatory status of natamycin have been discussed in the proceeding chapter.

The ability of modified-atmospheres and vacuum packaging has been known for a long time. The principal function of most types of preservative packaging is to delay microbial spoilage by restricting the growth of spoilage organisms. However, ideally they must also restrict non-microbial deterioration of product. The chapter on vacuum

packaging and modified atmosphere packaging discusses the different gases used in packaging, packaging materials, microbial safety and developments in modified atmosphere packaging. The topics like surface preservation and naturally occurring antimicrobial systems have also been covered.

Consumers in developed countries are demanding minimally processed foods that contain few synthetic additives. Food manufacturers are considering the possible uses of antimicrobial agents derived from animals, plants and microorganisms, to meet at least in part, the demand for more natural foods. More recently, and with the food safety issue remaining a matter of growing worldwide concern, 'biological' means for food preservation, are receiving increased attention in research. Therefore, issues like role of starter and protective cultures, their mechanism of action, their role in food processing along with genetic optimization has also been discussed in separate chapter.

The book concludes with chapters addressing towards this important issues like legislative aspects of food preservatives and future perspectives. The use of preservatives is also an important facet of food product regulation and ensuring food safety. Many countries have strict regulatory controls on the use of these compounds, particularly chemical preservatives. The regulation of preservatives is also major issue to food manufacturers all over the world.

This book would be useful resource for all the persons those are involved in food production, processing, distribution and to the students/researchers in the fields of food science, technology and microbiology and will make a real contribution to the continuing development of food safety and quality.

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**P. Richardson, editor. Improving the Thermal Processing of Foods, Woodhead Publishing Ltd, Cambridge, CB1 6AH, UK, 2004 (xiii + 507 pp., £150.00, ISBN 1-85573-730-2)**

Thermal processing is the primary method for adding value and ensuring microbial safety of food products.