

Preface

Almost all organisms produce nucleobases, nucleosides and nucleotides of purines and pyrimidines. There have been a number of books on nucleotide metabolism in microorganisms and humans. However, this is the first to focus on plants which exhibit important differences to other organisms in key areas of nucleotide metabolism and function.

The book covers the metabolism of purine, pyrimidine and pyridine nucleotides and nucleotide alkaloids in higher plants and points out differences from that occurring in other organisms. Likewise, differences in the salvage pathways and diversity of interconversions in plants, fungi and bacteria are highlighted. Various physiological aspects of these processes are covered along with their involvement in the control of plant growth and development. Among the topics covered are the purine alkaloids caffeine, theobromine and their metabolites which, in species including coffee, tea and cocoa, accumulate in quantity. There is also discussion of the function of purine alkaloids and the potential allelopathic role of caffeine. Studies, some making use of genetically-modified plants, have indicated that caffeine can play a role in a variety of plant defence strategies. Other investigations have provided evidence that trigonelline, found principally in coffee and legumes, has a role in resistance to salt stress and can act as a natural pesticide to reduce insect infestations. Finally, the book explores the absorption, metabolism and potential impact on health of dietary caffeine, theobromine and trigonelline.

The book provides comprehensive information on nucleotide structures and metabolic pathways and is a unique resource on a diversity of topics and as such is essential reading for students, researchers, and lecturers in plant biochemistry, physiology, chemistry, agricultural sciences, nutrition and the associated applied fields of research.

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