

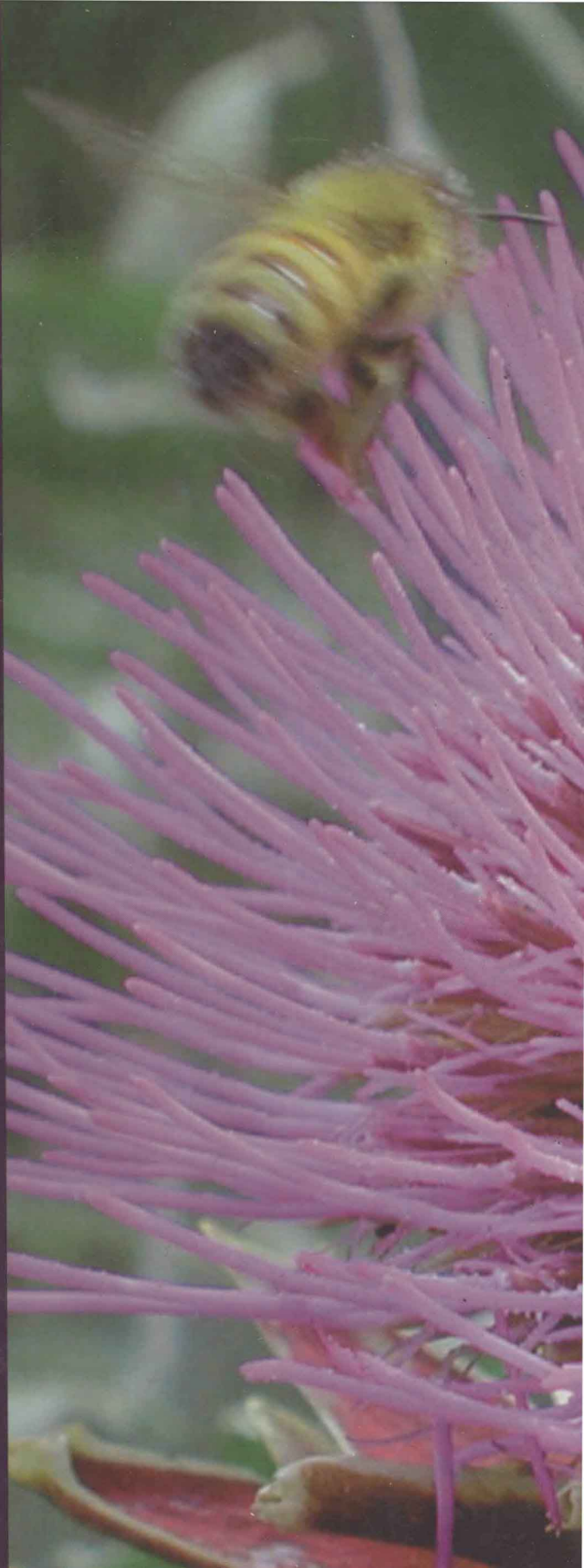
Recent Advances in Polyphenol Research

VOLUME 1

Edited by

Fouad Daayf and
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Recent Advances in Polyphenol Research

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A series for researchers and graduate students whose work is related to plant phenols and polyphenols, as well as for individuals representing governments and industries with interest in this field. Each volume in this biennial series will focus on several important research topics in plant phenols and polyphenols, including Chemistry, Biosynthesis, Metabolic Engineering, Ecology, Physiology, Food, Nutrition, and Health.

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Dedication

To Michel Bourzeix and his collaborators, Carmen Bataller and Nicolas Hérédia, whose efforts and enthusiasm have been decisive for the life of the Groupe Polyphénols.

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Preface

Plant phenolics are secondary metabolites that constitute one of the most common and widespread groups of substances in plants. They represent adaptive characters that have been subjected to natural selection during evolution, when the presence of a particular secondary metabolite has conferred a selection advantage to the plant containing it.

Polyphenols have a large and diverse array of beneficial effects on both plants and humans. For example, they are famous as antioxidants, hormones, constituents of essential oils, natural neurotransmitters, and as having many other biological activities. Their antioxidant ability is known to confer many health benefits such as reducing the risk of cardiovascular disease and cancer. They also provide antimicrobial activity for the plant's own defense against invading pathogens. The diversity of structure and activity of phenolic compounds has resulted in a multiplicity of research areas such as chemistry, biotechnology, ecology, physiology, nutrition, medicine, and cosmetics. The International Conference on Polyphenols, organized under the auspices of 'Groupe Polyphénols', is a unique opportunity for scientists in these and other fields to get together every other year and exchange their ideas and new findings. Apart from the two-page manuscripts – *Polyphenols Communications* – that comprise the proceedings of this conference, a separate volume has been concurrently published, comprising full chapters by the conference guest speakers. For the first time in the history of the conference, the board of 'Groupe Polyphénols' decided in 2005 that, starting in Winnipeg (ICP 2006), such a volume should be published by a renowned publisher such as Wiley–Blackwell, and given the series title *Recent Advances in Polyphenol Research*. The present (first) volume in the series is from the 23rd conference, which was hosted by the University of Manitoba in Winnipeg, Manitoba, Canada, from August 22 to August 25 2006, and chaired by Dr Fouad Daayf. The University of Manitoba, established in 1877, is one of the oldest universities in Canada. Its education and research programs are dedicated to many areas including agriculture, art, architecture, medicine, business, and science. The interest in polyphenols involves many departments on campus including the Departments of Plant Science, Chemistry, Food Science, Nutrition, and Human Ecology, as well as other health and functional food-related centers such as the Richardson Center for Functional Foods and Nutraceuticals.

In addition to the guest speakers' chapters, the present volume also includes full chapters from other selected speakers at the 23rd International Conference on Polyphenols, and covers five topics:

- 1) *Phenols and Polyphenols Chemistry*: (a) Isolation and structural elucidation; (b) Synthesis; (c) Reactivity and physico-chemical properties; (d) Biomolecular interactions.

- 2) *Phenols and Polyphenols Biosynthesis and Genetic Manipulation*: (a) Metabolic pathways; (b) Enzymology; (c) Biotechnology advances.
- 3) *Ecology and Physiology of Plant Phenolics*: (a) Biotic and abiotic stress; (b) Phenolic functions in plant development; (c) Role of phenolics in soil ecology.
- 4) *Food and Nutrition*: (a) Dietary intake; (b) Bioavailability; (c) Safety and toxicity; (d) Functional foods and nutraceuticals; (e) Taste.
- 5) *Phenolics and Health*: (a) Biological activities; (b) Drug discovery and development; (c) Cosmetics.

These topics were presented in 59 oral communications and 222 posters, and scientists had the opportunity to debate their results, and sometimes their divergent theories, in an exciting manner.

The 23rd International Conference on Polyphenols would not have been possible without the generous support of public and private donors such as the Manitoba Rural Adaptation Council and the University of Manitoba. Other sponsors include Horphag, l'Agence Universitaire de la Francophonie, Phytochemistry, Cargill, and Monsanto. Our sincere thanks go to all of our sponsors.

Fouad Daayf, Conference Chair
Vincenzo Lattanzio, President of 'Groupe Polyphénols'

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