

The Encyclopedia
of

Herbs & Spices

Volume 2

P.N. Ravindran

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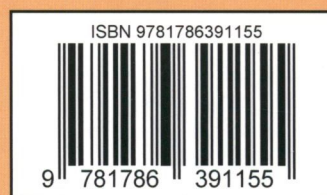
P.N. Ravindran

The Encyclopedia of Herbs and Spices provides comprehensive coverage of the taxonomy, botany, chemistry, functional properties, medicinal uses, culinary uses and safety issues relating to over 250 species of herbs and spices. These herbs and spices constitute an important agricultural commodity; many are traded globally and are indispensable for pharmaceuticals, flavouring foods and beverages, and in the perfumery and cosmetic industries. More recently, they are increasingly being identified as having high nutraceutical potential and important value in human healthcare.

An invaluable reference tool, this book:

- Presents easily accessible information, including up-to-date nomenclature and taxonomy.
- Is beautifully illustrated with over 250 figures.
- Begins with an introductory chapter on the definition, classification, history and applications of herbs and spices worldwide.
- Is written by a well-known authority within the field.

This encyclopedia is an excellent resource for researchers, students, growers and manufacturers in the fields of horticulture, agriculture, botany, crop sciences, food science and pharmacognosy.



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This Encyclopedia of Herbs and Spices is dedicated to:

The three women in my life –

my wife Shylaja and my daughters Neelima and Namitha;
they made my life worth living and worth cherishing.

This volume is also dedicated to all the Spices Research Workers throughout
the world – past and present – whose research findings and publications
made possible the writing of this encyclopedia.

Author Profile



P.N. Ravindran PhD is one among the best-known spice scientists whose experience in the research field of spices spans more than three decades. Born in 1942, he was educated in the Universities of Kerala and Calicut (Kerala State, India). He joined the Indian Agricultural Research Service under the Indian Council of Agricultural Research (ICAR) and worked in various capacities as Assistant Botanist, Scientist, Senior Scientist, Principal Scientist and Head of the Division of Crop Improvement and Biotechnology, as Director, Indian Institute of Spices Research (IISR) and as the National Coordinator for Spices Research under ICAR. At IISR, Dr Ravindran has established the largest spice germplasm collection in the world, built up the tissue culture and biotechnology facility and *in vitro* gene bank, and provided the leadership for research on germplasm collection, conservation, evaluation and documentation and in the areas of crop improvement and biotechnology of major spice crops such as black pepper, cardamom, ginger, turmeric and tree spices. Under his leadership, new varieties of black pepper, ginger and turmeric were developed.

Dr Ravindran retired from ICAR service in 2002, and soon joined as the first Director of the Centre for Medicinal Plants Research (CMPR) at Kottakkal, the research wing of the famed Arya Vaidyasala, the premier Ayurvedic organization in India. There he built up a strong research team to work on various aspects of medicinal plants; he established a genetic resources conservation garden, a tissue culture and biotechnology facility, taxonomy, pharmacognosy and phytochemistry labs, and equipped the Centre as a national-level institute for medicinal plant research. From 2006 to 2013 he was the Research Advisor for the Tata Global Beverages (TGB), where he was involved in the formulation of specialized teas in combination with medicinal and nutraceutical herbs and spices. He left the TGB when CABI entrusted him with the responsibility of preparation of the first scientific encyclopedia on herbs and spices.

Dr Ravindran has authored more than 300 research and review papers and edited monographs on Black pepper (Harwood Academic, 2000), Cardamom – the genus *Elettaria* (Taylor & Francis, 2002), Cinnamon and Cassia – the genus *Cinnamomum* (CRC Press, 2004), Ginger – the genus *Zingiber* (CRC Press, 2005) and Turmeric – the genus *Curcuma* (CRC Press, 2007). He has compiled and issued the large volume entitled *Advances in Spices Research: History and Achievements in Spices Research in India since Independence*, a valuable document and database on spice research in India.

Dr Ravindran is married to Dr Shylaja, a botanist and former Associate Professor and Head of the Department of Botany at Providence Women's College, Calicut, Kerala, India. They have two daughters, Neelima and Namitha. Dr Ravindran lives with his family in Kozhikode (Calicut), a coastal city in Kerala, India, famed for its spice trade from ancient times and very close to the landing spot of Vasco da Gama.

Preface

'In a brightly illuminated and well-organized groceteria of a local department store, we noticed a woman shopper gazing at rows of neatly arranged, colorful sifter-type containers. The little tins were filled with cinnamon, cloves, ginger, nutmeg, mace, pepper, paprika, sage, marjoram, and all the other delightfully aromatic and pungent spices which help milady to please her family and friends with the choicest of delectable dishes.' Thus starts the prologue to J.W. Parry's 1969 book on spices. Spices played a very important role, romantic and colourful, in human history from pre-biblical times to the modern day and may continue that enchanting role *ad infinitum*. It is difficult for us now, however, to appreciate the extent of influence that pepper and other spices had on nations and people during the checkered history of human civilization. Spices have always been a terrific temptation and it is this temptation that launched a thousand ships into the uncharted oceans in search of the fabled spice lands. One such exploration captained by Christopher Columbus went in search of the eastern spice land and reached the new world, the land of America. Yet another exploration under the Portuguese Captain Vasco da Gama reached Calicut (Kozhikode) on the western coast of India known as the Malabar Coast, which was the spice hub of the ancient world. From here, black pepper, ginger, turmeric, cinnamon, etc. were taken by sea route to the spice-trading capital of the West, Venice. As time rolled on and centuries passed, the reign of spice trade passed on to the Portuguese and then to other Western countries and finally the British established their hegemony over India and the Dutch became the masters of the East Indies. Scenes shifted rapidly and the post-Second World War world witnessed the breaking up of the colonial edifice and the end of Western imperialism. The world was gradually evolving into a global community and spices ceased to become a precious commodity. Pepper was available to everybody rather cheaply and the spice magic vanished, but only from the political and economic fields and not from the field of culinary art and kitchens.

Spices may be perhaps the most significant factor influencing culinary art, after the discovery of the use of salt. The homemakers, as well as the chefs all over the world, use spices in a thousand ways to enhance the flavour, taste and novelty of dishes, and many thousands of dishes have evolved in the diverse cuisines of the world. In all the cuisines, spices played a key role. Spices add flavour, taste, colour and aroma to the dishes and also help in the preservation of food.

The more recent development in the use of spices is in the field of health management. Many spices (such as pepper, cardamom, ginger, turmeric, rosemary, kokum, wasabi, etc.) have a high nutraceutical potential and thus are very valuable for human healthcare. All spices play significant roles in traditional medicine systems and also in tribal and home medicine areas.

About 260 species of plants are used as source plants of herbs and spices by humankind globally. Some of them are widely grown and widely used; some are extremely restricted and are used only in a few limited locations or regions; some are produced on a large scale and traded widely and globally; and some are not cultivated or traded but instead the wild-grown plants are collected and used. Some spices (like saffron) are very expensive; some are quite cheap such as onions and garlic. Many of the cheaper spices are the ones used widely and ubiquitously in diverse cuisines all over the world.

This encyclopedia is the first attempt to collect and collate scientific information on all the species of plants used as spices by humans. There is an introductory chapter providing essential information on spices such as definition, classification, history and areas of applications (medicinal, culinary, aromatherapy, or as beauty aid). Many informative tables form part of this chapter. This volume includes 240 chapters, providing scientific and culinary information on about 260 species. Each spice is discussed in the pattern: taxonomy, botanical notes, chemical notes, functional properties, medicinal uses, culinary uses and safety issues. The horticultural and agronomic aspects are not included because of the commonality of the methods involved. The taxonomic aspects are presented in some detail because such information is hard to find in most textbooks and other publications and there exists a lacuna in the understanding of the correct and up-to-date nomenclature and taxonomic aspects. I made use of the ITIS (Integrated Taxonomy Information System) as the guideline for nomenclature and the Tropicos Plant Taxonomy Databases of the Missouri Botanical Garden (supported by Kew and various other such organizations) as the source of synonyms. Wherever needed the GRIN/NPGS and IPNI databases were also consulted. The nomenclature adheres to the International Code of Botanical Nomenclature. The chapters are arranged in alphabetical order of the common names of spices.

I tried my best to keep the information provided here as up to date as possible and practicable. During the process of compressing the information for presentation here in a capsule form, there can be omissions and probably some typographical mistakes too, though I made all efforts to avoid such errors. I request the reader to bear with me for such omissions and mistakes if any.

I hope this encyclopedia will be a useful guide to all those who are interested in spices in one way or another: spices workers, traders, teachers, students, growers and users. With all humility I place this volume before all of you.

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Kozhikode (Calicut)
June 2017

Acknowledgements

Like any encyclopedia, this volume contains information collected and collated from diverse sources, from the publications of a large number of spices researchers of the past and the present from all over the world, from the ancient times, spanning about two millennia, from great men like Pedanius Dioscorides (c. 40–90 AD), the physician–pharmacologist–botanist of ancient Greece, to the young scientists who published their studies in 2015–2016. I gratefully acknowledge all of them, though indirectly; their help and support made this encyclopedia a reality. I hope the contributions of the spices workers will live longer through the pages of this encyclopedia. **I salute all of them, those who have gone ahead and those who have walked along, and thank them from the depth of my heart.** I request them to forgive me for any mistake that I may have committed during the process of compilation and compression of the vast information to a capsular form for presentation here.

This encyclopedia is made possible through the help of two persons – my wife Dr Shylaja, who has read through the entire draft, correcting and editing and bringing the same to the final shape. She also drew some of the sketches. I acknowledge my gratitude to her, who with enthusiasm and dedication did a great job, that too in addition to all the household chores,

bearing patiently my short-tempered and irritating manners. My love and thanks go to her for the great support she offered, both psychological and logistic.

Secondly, Dr Mary Asha Antony, a student of my wife, who, in spite of her busy and tiresome work schedule, volunteered to read the draft and do the editorial corrections. I wholeheartedly thank her for the help and support she voluntarily offered and place on record my gratitude towards her.

Most of the sketches that are provided with the various spices are done by Mr K.R. Babu, a professional artist and well-known mural painter. I acknowledge my gratitude to him and thank him wholeheartedly.

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Many elders, relatives and friends have showered on me their best wishes and blessings during the course of this work and for its successful completion. I thank all them and wish them well.

Disclaimer

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