## CONTENTS

Preface to the Series vii  
Preface ix  
Contributors xv  
Acknowledgements xix  

### I. Introduction

1. The Folklore and Cosmetic Use of Various Salvia Species  
   *Anthony C. Dweck*  
   1  

### II. Botany

2. The Sage Plants in Greece: Distribution and Intraspecific Variation  
   *Regina Karousou, Effie Hanlidou and Stella Kokkini*  
   27  
3. Salvia in Southern Africa  
   *Anna K. Jäger and Johannes van Staden*  
   47  

### III. Chemical Constituents

4. Terpenoids in the Genus Salvia  
   *Ayhan Ulubelen*  
   55  
5. Essential Oils of Salvia spp: Examples of Intraspecific and Seasonal Variation  
   *Amalia L. Giannouli and Spiridon E. Kintzios*  
   69  
6. Salvianolic Acids and Related Compounds  
   *Lian-Niang Li*  
   81  

### IV. Cultivation and Breeding

7. The Cultivation of Sage  
   *Andreas J. Karamanos*  
   93  
8. Genetic Improvement of Cultivated Species of the Genus Salvia  
   *Jenó Bernáth and Éva Németh*  
   109  
9. The Ecophysiology of Salvia: Disorders and Adaptation  
   *Emmanouil Panagiotopoulos, Chrisostomos Kapetanos, Maria Skapeti, Constantinos Cholevas, John Drossopoulos, Michael Loukas and Spiridon E. Kintzios*  
   125  
10. Legal Protection of Salvia Varieties  
    *Bernard Le Buanec*  
    135  

### V. Pharmacology

11. The Biological/Pharmacological Activity of the Salvia Genus  
    *Dea Baricevic and Tomaz Bartol*  
    143  
12. Antioxidants from Salvia officinalis  
    *Stanley G. Deans and Elisabeth J.M. Simpson*  
    185
CONTENTS

13. The Antihypertensive Properties of Dan-Shen, the Root of *Salvia miltiorrhiza*  
   Takako Yokozawa 193

14. Why Sage May be a Wise Remedy: Effects of *Salvia* on the Nervous System  
   Nicolette Perry, Melanie-Jayne Howes, Peter Houghton and Elaine Perry 207

VI. Biotechnology
15. The Biotechnology of Labiatae  
   Olga Makri 225

16. *In vitro* Rosmarinic Acid Production  
   Isabelle Hippolyte 233

17. *Salvia* spp.: Tissue Culture, Somatic Embryogenesis, Micropropagation and Biotransformation  
   Spiridon E. Kintzios 243

18. Production of Secondary Metabolites using Liquid Culture of *Salvia* Plants: Up-to-Date Reports and Scale-up Potential  
   Emmanouil Panagiotopoulos, Maria Skapeti and Chrisostomos Kapetanos 251

VII. Commercial Aspects
19. Production of *Salvia* Oil in Mediterranean Countries  
   K. Husnu Can Baser 263

VIII. General Issues
20. Scientometric Analysis of Science and Technology Bibliographic Information Sources with Regard to Genus *Salvia*  
   Tomaz Bartol and Dea Baricevic 269

Appendix

Short Notes on the Olfactory Properties of the Essential Oil of Some Sage Species 289

Index 291