ESSENTIAL OILS

Extraction Methods and Applications

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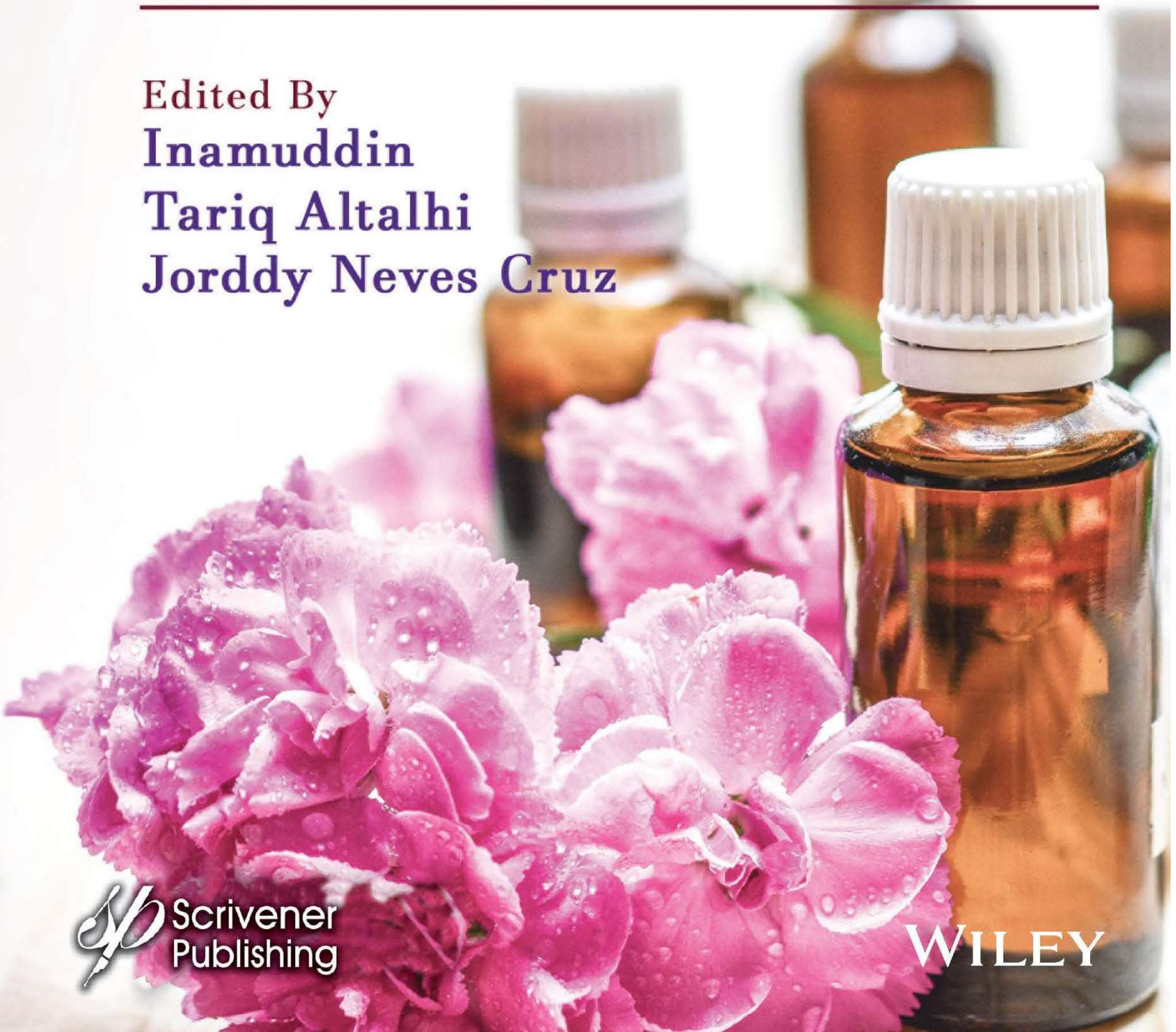

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Microbial Influence on Plants for Enhanced Production of Active Secondary Metabolites

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Abstract

Secondary metabolites (SM) are not crucial for a cell's livelihood but play a significant role in better adaptation to its environment. Secondary metabolites being antiviral, antibiotic and antifungal, can guard plants from pathogens. Spices secondary metabolites such as black pepper, cardamom, ginger, turmeric, etc. are extremely important in today's world because they have antioxidant, anti-cancerous, antimicrobial and other medicinal properties. The secondary plant metabolites modules, namely phenolics, alkaloids, saponins, and terpenes, are briefly discussed here in connection with their applications and advancements. There are numerous instances where plants' secondary metabolites can be used to advance various fields, including medicine, dyes, pigments, insecticides, pesticides, etc. Secondary metabolites are being made in both *in vitro* and *in vivo* tests. The influence of microbes on plants is described in the context of the enhanced manufacturing of these secondary metabolites in various stress conditions, with mechanisms of contact briefly elaborated. This chapter gives a detailed outline of the plant secondary metabolites, their classifications, secondary metabolite production and applications, and microorganisms' influences on plants and their interactions.

***Keywords*:** Secondary metabolites, PGPR, PGPF, microbial interactions, symbiosis, plant growth promoters

7.1 Introduction

Sessile organisms such as plants can have a significant impact on conventional as well as western medicines. The phytochemical elements of plants are classified into two groups according to their function in fundamental metabolic processes: primary and secondary metabolites. Primary metabolites play a direct role in healthy implementation, reproduction, and development, while Secondary metabolites are the byproducts of secondary metabolic processes such as the shikimic acid pathway [1]. Secondary metabolites are organic compounds synthesized by an organism that is not essential to facilitate growth and life. They can't perform primary functions like growth, photosynthesis, reproduction, and energy. Secondary metabolites are the main sponsors of specific odor, color, and taste

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