

Nanomaterials in Plants, Algae, and Microorganisms

CONCEPTS AND CONTROVERSIES: VOLUME 1

Edited by

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Nanoencapsulation of Essential Oils: A Possible Way for an Eco-Friendly Strategy to Control Postharvest Spoilage of Food Commodities From Pests

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22.1 INTRODUCTION

Postharvest damage of agricultural food commodities by storage pests can cause around 30%–35% of the yearly loss. The major culprits of such losses are insects and fungi. Furthermore, the secretion of mycotoxins by different fungi on stored food commodities poses a serious health concern to consumers (Prakash et al., 2012a). Various outbreaks of mycotoxin poisoning through contaminated foods have been reported occasionally from different parts of the world (Reddy and Raghavender, 2007; Wagacha and Muthomi, 2008), exploring the severity of the problem. The application of synthetic pesticides to minimize such losses has been reported to cause serious risk to both health and the environment depending on their toxicity, level of contamination, and the duration of exposure (Kohler and Triebskorn, 2013), leaving behind the urgent need to search for safer alternatives for the management of storage losses. In this context, a careful systematic search for phytochemicals is needed by the agricultural industries and government organizations to develop plant-based pesticides because they are biodegradable and could be better alternatives of synthetic pesticides for food protection. Additionally, the bioactivity of plant products is caused by synergistic effects of many active components leading to multiple modes of action and less resistance development during their pesticidal effect (Kedia et al., 2015a).