BENEFICIAL MICROBES IN AGRO-ECOLOGY

Bacteria and Fungi

Edited by
N. Amaresan, M. Senthil Kumar, K. Annapurna,
Krishna Kumar, and A. Sankaranarayanan

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BACTERIA AND FUNGI

Edited by

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CHAPTER

10

Exiguobacterium

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1. Introduction/taxonomy

Exiguobacterium is a genus of bacilli (Table 10.1) that was first described in 1983 by Collins et al. with the characterization of *E. aurantiacum* strain DSM6208T from an alkaline potato processing plant (Collins et al., 1983). The members of the genus display low G+C content and are gram-positive, facultative anaerobes or aerobes with high morphologic, physiologic, and geographic diversity (Chaturvedi and Shivaji, 2006; Singh et al., 2013; Dastager et al., 2015). The bacterial genus accommodates many versatile species isolated from diverse environments, which have been explored for applications in agriculture, environment, and industry (Kasana and Pandey, 2018).

A number of species of *Exiguobacterium* are known today that are widely distributed in the environment. The members of this genus have been investigated for the degradation of wide range of complex compounds, viz., triphenylmethane dye and 4-chloroindole (Wang et al., 2012; Arora and Bae, 2015), bioremediation of pesticides and heavy metals like chromium and arsenic (Rizvi et al., 2016; Mohapatra et al., 2017), and other biotechnologic and industrial applications, including enzyme production (Kasana and Pandey, 2018). The genome sequences analysis of the strains of this genus have shown the presence of many stress-responsive genes that help them to grow in diverse ecologic niches and establish their importance in various extreme environments (Kasana and Pandey, 2018). Some isolates also possess plant growth-promoting capabilities (Chauhan et al., 2015; Kumar and Verma, 2018), and they are currently being explored for increasing agricultural production. The agro-utility of *Exiguobacterium* havs been confirmed by its ability to suppress fungal diseases of cereal crops and to inhibit the growth and development of plant pathogens (Selvakumar et al., 2009). Under pot culture conditions, it is also reported to improve the germination and early growth parameters of different plant species. Studies involving the screening and establishment of *Exiguobacterium* spp. and their active substances will greatly help in formulating bioinoculants for application in agricultural productions (Zhang et al., 2013).

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