Modifications of morphological and anatomical characteristics of plants by application of brassinosteroids under various abiotic stress conditions - A review

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Modifications of morphological and anatomical characteristics of plants by application of brassinosteroids under various abiotic stress conditions- A review

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Abstract

Brassinosteroids (BRs) are considered as the 6th group of plant growth regulators with significant growth promoting activity. BRs were initially extensively studied for their profound growth promoting physiological responses viz., growth, yield, seed germination, photosynthesis, senescence, photomorphogenesis, flowering etc. BRs have been further explored for stress-protective properties in plants against a number of abiotic stresses like heat, chilling, freezing, drought, flooding, oxidative, salt, allelochemicals, radiation, light, wind, heavy metals stresses etc. It can be aptly stated that BRs induce plant tolerance to a wide spectrum of stresses. The ever-changing environmental conditions are causing serious damages to the plants as the present stressful environmental conditions are posing unrepairable morphological and anatomical changes wherein the growth and yield of plants is being greatly hampered. The present review is a study on the role of BRs in the improvement of morphological and anatomical changes plants grown under various abiotic stress conditions.

Key words: Abiotic stresses, anatomical characteristics, brassinosteroids (BRs), morphological characteristics

Abbreviations: BRs = Brassinosteroids, Brassinolide = BL, 24-EpiBrassinolide = 24-EpiBL, 28-Homobrassinolide =24-HomoBL

Introduction

BRASSINOSTEROIDS

Brassinosteroids (BRs) are a new type of polyhydroxy steroidal phytohormones or plant growth regulators (PGRs) with significant growth-promoting influence (Vardhini, 2015a; Vardhini and Anjum, 2015; Latha and Vardhini, 2016). The discovery of a new group of plant growth hormones from the pollen of *Brassica napus* (Mitchell et al., 1970; Mandava and Mitchell, 1971) as well as pollen and immature seeds of bean (Mitchell et al., 1971; Worley et al., 1971) paved the way for the discovery of the 6th group of PGRs which were later extracted