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## Abstract

, QĀXHGFH RI EUDVVLQRVWHURLG FRUUHVSRQGHQW YL] HSL%/ DQG KRPR% constraints of 10<sup>th</sup> DAS of Brassica oleracea YL] FDEEDJH FDXOLĀRZHU DQG EURFFROL 6HHGSU various concentrations of 24-epiBL and 28-homoBL (10<sup>-6</sup> M, 10<sup>-9</sup> M and 10<sup>-12</sup> M) were applied and observed that BRs WUHDWPHQWV HQFRXUDJHV VHHG JHUPLQDWLRQ VLJQLĭ P<sup>th</sup> DAS Seed priming RPSDUG WR treatments with above mention concentrations of 24-epiBL and 28-homoBL exaggerated the morphology of 10<sup>th</sup> seedlings RI FDEEDJH FDXOLĀRZHU DQG EURFFROL RQ YDULRXV H[WHQV DV URRW OHQJW DOO WKH YDULHWHV EXW VKRRW OHQJWK HQKDQFHG VLJQLĭ FDQWO\ LQ DOO YDU that BRs works best on optimal concentration, i.e., 10<sup>-9</sup> M in 24-epiBL. Photosynthetic pigments i.e. total chlorophyll, FKORURSK\OO D DQG E FDURWHQRLGV ZHUH DOVR LQĀXHGFH E\ WKH WUHDWPHQW was very much dose dependent and optimum dose was varying variety to variety. As there is a direct correlation between the photosynthetic pigment and carbohydrate synthesis so study also suggest that the accumulation of carbohydrate also ameliorated after seed priming treatments. In conclusion it was found that BRs works in dose dependent manner DQG RSWLPXP GRVH YDU\LQJ YDULHW\ WR YDULHW\ %URFFROL UHVSRQGHG PRVW

**Keywords:** 24-epiBL; 28-homoBL; Brassicaceae Cabbage; Cauli ower; Broccoli; Photosynthetic pigments; Proteins; Carbohydrates

**Abbreviations:** 24-epiBL: 24-epibrassinolide; 28-homoBL: 28-homobrassinolide; BRs: Brassinosteroids; DAS: Day Old Seedlings; DDW: Double Distilled Water; DW: Distilled Water

## Introduction

Brassinosteroids (BRs) are endogenous plant hormones essential for the proper regulation of multiple physiological processes required for normal plant growth and development. BRs also have dramatic pleiotropic effects on a broad range of diverse developmental pathways i.e. cell division and cell elongation, photo-morphogenesis, reproductive development, leaf senescence and also in stress responses and have further pointed to BRs interactions with other plant hormones and environmental cues [1,2]. Clouse and sasse [3] revealed that brassinosteroids are required for normal growth and development of plants along with this it also play a crucial role under stress conditions as reported by Kumar et al. [4] and Sirhindi et al. [5] in Brassica juncea L. under temperature stress. It also has the ability to enhance metabolic reactions by enhancing activity of some enzyme reported under seasonal condition [6]. Exogenous application of brassinosteroid in agriculture to promote plant growth, production and quality is becoming very common now a day. BRs exhibit a prominent role in various physiological processes when sprayed on young cucumbers and are now widely used to enhance plant growth and yield of important agricultural crops as recognized by Jiang et al. [7].

## Materials and Method

Seeds of Brassica oleracea cauli ower, cabbage and broccoli were procured from Punjab Agricultural University, Ludhiana, Punjab. Seeds were surface sterilized with hypochlorite and rinsed in DDW and primed with DDW and primed with 24-epiBL and 28-homoBL concentrations (10<sup>-6</sup>, 10<sup>-9</sup>, 10<sup>-12</sup> M) for 8<sup>th</sup> hours and DW as control. e treated seeds were sown in three replications. Morphological data in terms of seedling growth germination, shoot length, root length, fresh weight and dry weight were measured on 1<sup>th</sup>, 3<sup>th</sup> and 4<sup>th</sup> day. e dry weight was calculated by using

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Brassica oleracea belongs to family Brassicaceae is a rabi crop, grown as a consequence on morpho-physiological constraints in cauli ower, cabbage and broccoli.

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