# Synthesis of New Brassinosteroid 24-Norcholane Type Analogs Conjugated in C-3 with Benzoate Groups

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Abstract
The metabolism of brassinosteroid leads to structural modifications in the ring skeleton or the side alkyl chain. The esterification and glycosylation at C-3 are the most common metabolic pathways, and it has been suggested that conjugate brassinosteroids are less active or inactive. In this way, plants regulate the content of active brassinosteroids. In this work, the synthesis of brassinosteroid 24-norcholane type analogs conjugated at C-3 with benzoate groups, carrying electron donor and electron attractant substituents on the aromatic ring, is described. Additionally, their growth-promoting activities were evaluated using the Rice Lamina Inclination Test (RLIT) and compared with that exhibited by brassinolide (used as positive control) and non-conjugated analogs. The results indicate that at the lowest tested concentrations (10-8-10-7 M), all analogs conjugated at C-3 exhibit similar or higher activities than brassinolide, and the diasteroisomers with S configuration at C-22 are the more active ones. Increasing concentration (10-6 M) reduces the biological activities of analogs as compared to brassinolide.

Author keywords
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