

A talk between flavonoids and hormones to reorient the growth of gymnosperms

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Abstract

Plants reorient the growth of affected organs in response to the loss of gravity vector. In trees, this phenomenon has received special attention due to its importance for the forestry industry of conifer species. Sustainable management is a key factor in improving wood quality. It is of paramount importance to understand the molecular and genetic mechanisms underlying wood formation, together with the hormonal and environmental factors that affect wood formation and quality. Hormones are related to the modulation of vertical growth rectification. Many studies have resulted in a model that proposes differential growth in the stem due to unequal auxin and jasmonate allocation. Furthermore, many studies have suggested that in auxin distribution, flavonoids act as molecular controllers. It is well known that flavonoids affect auxin flux, and this is a new area of study to understand the intracellular concentrations and how these compounds can control the gravitropic response. In this review, we focused on different molecular aspects related to the hormonal role in flavonoid homeostasis and what has been done in conifer trees to identify molecular players that could take part during the gravitropic response and reduce low-quality wood formation. © 2021 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

Conifers; Hormone and flavonoids distribution; Inclination response; Lignin biosynthesis