

Exploitation of Terpenes as Guardians in Plant Biotechnology

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Abstract : Plants are always being threatened by biotic and abiotic elements in their abode. Although they have inherited mechanisms to defend themselves, sometimes due to overpowering of their enemies or weakening of themselves, they just suffer from those elements. Human, as to help plants defend themselves, have developed several methods among which application of terpenes via plant biotechnology is promising. Terpenes are the most frequent and diverse secondary metabolites in plants. In these plants, terpenes are involved in different protective aspects. In this field, by utilizing biotechnological approaches on them, a delicate, precise, and an economic intervention will be achieved. In this review, first, the importance of terpenes as guardians in plants, which include their allelopathy effect, a call for alliances, and a mitigation impact on abiotic stresses will be pointed out. Second, problems concerning terpenes application in plant biotechnology comprising: damage to cell, undesirable terpene production and undesirable concentration and proportion of terpenes will be discussed. At the end, the approaches in plant biotechnology of terpenes including tampering with terpene gene sequences, compartmentalization, and localization and utilization of membrane transporters will be expressed. It is concluded with some useful notions concerning the topic.

Keywords : plant biotechnology, plant protection, terpenes, terpenoids

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