

Aloe vera: a review update on advancement of in vitro culture

ABSTRACT

Aloe vera L., commonly known as aloe, secures its position as one of the primary medicinal plants with multipurpose applications starting from pharmaceutical to cosmetic aspects with promising economic return. The plant was under threatened category due to its imprudent harvesting from wild as it is extensively used by medicinal industries for its clinical properties. It also faces problem with its conventional propagation system. The rapidity and success of propagation of aloe have constantly been a key concern for breeders and cultivators. In vitro culture is one of the few efficient techniques to triumph over these inherent intricacies. Over 200 multidisciplinary publications, mostly in the English language, were surveyed for the uses, useful properties, propagation, and biotechnological advancement of aloe. Starting from 1989 up till now, extensive research works have been performed on aloe tissue culture. Nevertheless, there is no review report available on in vitro culture of this plant. The present paper intends to present a comprehensive overview of the in vitro culture of such an important plant of diversified utilities. This article reviews advances made on various aspects of aloe tissue culture and micropropagation, including sterilization of explants, variety of explants sources, direct and indirect organogenesis, acclimatization, and fidelity assessment of in vitro regenerated clones. Since this is the first review on in vitro culture of aloe, it provides an exclusive and noteworthy resource and spring-board from which to commence or further studies associated to in vitro culture of aloe.

Keyword: Aloin; Callus; Medicinal plant; Multiple shoot; Organogenesis; Rooting; Tissue culture