

Stimulation of node and lateral shoot formation in micropropagation of olive (*Olea europaea* L.) by using dikegulac

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Abstract Dikegulac, a growth regulator, was shown to stimulate in vitro shoot multiplication of olive cultivars Canino, Frantoio, Moraiolo, but not cultivars Rosciola and Piantone di Moiano. The Rugini Olive Medium including zeatin (4.5 μM) was used supplemented with a range of dikegulac concentrations (0–133.4 μM). An optimal result in number of shoots and nodes was obtained on cultivars Canino, Frantoio and Moraiolo at 66.7 μM dikegulac. Higher concentrations did not stimulate additional shoot and node formation and resulted in a drastic reduction in height of shoots. Elongated shoots were rooted and acclimatised and showed normal development compared to control plants.

Keywords Apical dominance · Axillary shoots · Dikegulac · Growth regulators · Tissue culture · In vitro propagation · Shoot proliferation · Zeatin

Abbreviations

IBA	Indole-3-butyric acid
BAP	Benzyl amino purine
TDZ	Thidiazuron
TIBA	Tri-iodo benzoic acid

Olive is one of the most important tree crop species of the Mediterranean area. In spite of advances in nursery technology, conventional vegetative propagation is still deficient. Propagation through seed is not desirable due to segregation and a long period of juvenility (Lambardi and Rugini 2003). Consequently, for most olive cultivars, micropropagation is more convenient than traditional propagation (Rugini et al. 2001). The first study on olive micropropagation was reported by Rugini (1984), who developed a specific medium formulation by analysing mineral elements from mature seeds. This medium has been used for commercial plant production in Italy for more than 50 olive cultivars and results in high quality production and rapid growth of plants (Rugini et al. 2006). However, olive is characterized by strong in vitro apical dominance (Rugini and Panelli 1993a), with little formation of secondary axillary shoots, thus limiting the in vitro micropropagation potential. Zeatin, the most utilized cytokinin for shoot proliferation of olive (Rugini 1990; Grigoriadou et al. 2002), is required in high concentrations,

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