## The effects of plant growth regulators on the shoot-inducing capacity of Rosemary (*Rosmarinus officinalis* L.)

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## Abstract

Rosemary (Rosmarinus officinalis L.) is one of the plants in the genus Rosmarinus which contain essential oil. The essential oil content in the leaves contains many prominent and beneficial compounds, such as antioxidants like carnosic acid and rosmarinic acid, as well as flavonoid groups including apigenin, and luteolin with anti-inflammatory properties. The outstanding properties of the plant have resulted in widespread application in the medicine, cosmetics, pharmaceutical, and food industries. Given the numerous benefits of Rosemary, the demand for this plant is steadily increasing. Therefore, developing new cultivation methods that yield better results is essential. In vitro tissue culture has emerged as a promising technique that adapts to the requirements of the growing consumer market. This study aimed to evaluate the effects of the plant growth regulator 6-Benzyladenine (BA) on the in vitro shoot induction of Rosemary. Axillary shoots were sterilized using 0.1% Mercury dichloride (HgCl<sub>2</sub>) for various durations of 10, 15, and 20 minutes. The results indicated that sterilization for 10 minutes was the most effective, achieving a clean rate and survival rate of 77.78%. The study investigated the effects of different BA concentrations (ranging from 0.0 to 3.0 mg/L) on shoot formation. The optimal result was observed at a BA concentration of 2.5 mg/L, which yielded a 100.00% shoot induction rate and an average of 4.71 shoots per explant. In conclusion, the results indicate that the in vitro culture of rosemary with a sterilization procedure using 0.1% HgCl<sub>2</sub> for 10 minutes is suitable. Subsequently, culturing in an MS medium supplemented with 2.5 mg/L BA for shoot induction results in the highest number of shoots with the best quality after 3 weeks.

Keywords: Rosmarinus officinalis L., Rosemary, BA, growth regulator, shoot induction rate

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