

# Production of *Ceratonia siliqua* Female Plantlets through Tissue Culture Technique

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## ABSTRACT

*Ceratonia siliqua* is a multipurpose, economical tree that stands drought and is considered as a threatened tree. Therefore, a tissue culture technique was adopted to produce female plantlets vegetatively in a short period of time. Phenolic excretion problem of explants was overcome by several consequent steps, i.e., soaking in antioxidants (Ascorbic acid, 150 mg/l + Citric acid, 100 mg/l) overnight, dark treatment and in situ explant transfer. Explants were transferred into MS-solidified medium supplemented with 25 plant growth regulator treatments comprising; *N*<sup>6</sup>-benzyl-aminopurine (BAP), 6-furfuryl aminopurine (Kinetin),  $\alpha$ -naphthaleneacetic acid (NAA) and indole butyric acid (IBA) at concentrations (0.0, 0.5 and 1.0 mg/l). Three types of explants, i.e., shoot tips, nodal cuttings and lateral buds were taken from recent suckers of a productive female tree and were subjected to this trial. Nodal cutting explants achieved the highest survival percentage (80%) and optimal shootlets formation (100%), when cultured on the most adequate supplements (BAP, 0.5 + IBA, 0.5) mg/l or (Kin, 1.0 + IBA, 1.0) mg/l.

**Key words:** *Ceratonia siliqua*, carob tree, phenolic excretion, tissue culture, suckers, female plantlets.

## INTRODUCTION

*Ceratonia siliqua*, Linn (Carob) is the only species now widely distributed in warm countries, being grown for shade, edible pods and its hard wood. Imam (1971) and Lo Gullo *et al.*, (1986) stated that carob is of much importance as a farm crop throughout the Mediterranean basin and other hot and semi-arid regions of hot, dry summer and cooler, but frostless winter. Thomas (1981) suggested that carob stands drought and brilliant sun, and grows

well in ordinary well drained soil. The best kinds are dioecious, and a sufficient number of staminate trees, therefore, must be planted to pollinate the female trees.

Bailey (1933) reported that carob grew from seeds after soaking for 2-3 days before sowing and afterwards seedlings budded to the best varieties. It can be also raised from cuttings, but requires bottom heat and careful treatment, however, the large pods contain protein (5.05-7.8%), sugar (40-46.9%) and fiber 25.85%. In addition, the pulp contains 0.51% fat, 3.01% ash, 18.5% tanins, 4.7%