

ABSTRACT**PROPAGATION OF *Hypericum adenotrichum* Spach USING TISSUE CULTURE TECHNIQUES AND INVESTIGATION OF SECONDARY METABOLITE VARIATIONS UNDER *IN VITRO* CONDITIONS**

Ömer YAMANER

Ph.D. Thesis, Department of Biology
Supervisor: Assist. Prof. Dr. Bengi ERDAĞ
2011, 137 pages

In this study, it has been aimed to describe an appropriate procedure for *in vitro* propagation of *H. adenotrichum* which is an endemic plant and also has a potential value as a medicinal plant, and to determine the effects of some stress and elicitor treatments on production of secondary metabolites under *in vitro* conditions. In seed germination studies, it has been determined that light, dark, stratification, temperature and salt concentration of medium have positive or negative effects on seed germination behavior. ¼ MS/Galzy medium has been determined as the best medium for seedling development. Callus formation has been observed from leaf explants excised from the plants that were collected from their natural habitat. The highest callus induction percentage has been obtained on MS media supplemented with 4 mg/L BA + 0.2 mg/L NAA. Shoot induction has been observed from calli induced on the MS media containing BA alone after subculturing the calli on MS medium supplemented with 0.5 mg/L KIN. Directly shoots formation has been observed on leaf explants of *H. adenotrichum* on MS media containing KIN alone. Direct and indirect shoots of *H. adenotrichum* that were obtained from *in vitro* experiments have showed axillary shoot regeneration on MS media containing KIN alone. The highest axillary shoot number per explant has been obtained from MS medium containing 0.5 mg/L KIN. The root formation has occurred from axillary shoots of *H. adenotrichum* on media containing 0.5 mg/L IAA. Sucrose, polyethylene glycol, chrome, pectin and mannan have been applied to *in vitro* seedling intended for elicitation of important secondary metabolites of *H. adenotrichum*. Methanolic extracts of *in vitro* seedlings exposed various stress and elicitor treatments have been analyzed with HPLC. According to the results of HPLC analysis, pectin for elicitation of hypericins and chrome for elicitation of flavonoids have been determined as the most effective elicitors.

Key words: *Hypericum adenotrichum*, *in vitro* propagation, adventitious shoot regeneration, axillary shoot regeneration, elicitor, secondary metabolites