

Effects of Silver Nanoparticles on in vitro Adventitious Shoot Regeneration of Water Hyssop (*Bacopa monnieri* L. Wettst.)

Authors : Muhammad Aasim, Mehmet Karataş, Fatih Erci, Şeyma Bakırcı, Ecenur Korkmaz, Burak Kahveci

Abstract : Water hyssop (*Bacopa monnieri* L. Wettst.) is an important medicinal aquatic/semi aquatic plant native to India where it is used in traditional medicinal system. The plant contains bioactive compounds mainly Bacosides which are the main ingredient of commercial drug available as memory enhancer tonic. The local name of water hyssop is Brahmi and brahmi based drugs are available against for curing chronic diseases and disorders Alzheimer's disease, anxiety, asthma, cancer, mental illness, respiratory ailments, and stomach ulcers. The plant is not a cultivated plant and collection of plant from nature make plant threatened to endangered. On the other hand, low seed viability and availability make it difficult to propagate plant through traditional techniques. In recent years, plant tissue culture techniques have been employed to propagate plant for its conservation and production for continuous availability of secondary metabolites. On the other hand, application of nanoparticles has been reported for increasing biomass, in vitro regeneration and secondary metabolites production. In this study, silver nanoparticles (AgNPs) were applied at the rate of 2, 4, 6, 8 and 10 ppm to Murashihe and Skoog (MS) medium supplemented with 1.0 mg/l Benzylaminopurine (BAP), 3.0% sucrose and 0.7% agar. Leaf explants of water hyssop were cultured on AgNPs containing medium. Shoot induction from leaf explants were relatively slow compared to medium without AgNPs. Multiple shoot induction was recorded after 3-4 weeks of culture compared to control that occurred within 10 days. Regenerated shoots were rooted successfully on MS medium supplemented with 1.0 mg/l IBA and acclimatized in the aquariums for further studies.

Keywords : Water hyssop, Silver nanoparticles, In vitro, Regeneration, Secondary metabolites

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