



Effect of Growth Regulators and *in vitro* Clonal Propagation of *Adhatoda vasica*

Aditi Sharma¹, Atal Bihari Bajpai², Naina Srivastava³, Yunus Ali⁴, Anjali Thapa⁴, Naveen Gaurav¹ and Arun Kumar^{1*}

¹Department of Biotechnology, School of Basic and Applied Sciences, Shri Guru Ram Rai University, Dehradun 248001, Uttarakhand, India.

²Department of Botany D.B.S (P.G) College Dehradun 248001, Uttarakhand, India.

³Department of Botany D.A.V (P.G) College Dehradun 248001, Uttarakhand, India.

⁴Department of Agriculture, Shri Guru Ram Rai (PG) College, Dehradun, Uttarakhand, India.

*Corresponding author: dean.research@sgrru.ac.in

ABSTRACT

Biotechnological tools such as plant tissue culture are paramount for the selection, multiplication and maintenance of medicinal plants. Plant tissue culture techniques proffer a desegregated approach for the production and perusal of enhanced active metabolites available in the plants. *In vitro* regeneration also empowers to execution of very large-scale multiplication of disease-resistant plants. Embracing micropropagation procedures for the creation of plantlets in high numbers as well to defend befitting germplasm is a prerequisite that needs to be tackled to develop a rapid *in-vitro* regeneration of *Adhatoda vasica*. This plant has been exercised as a putted therapy in an Unani stream of medicines for centuries. Nodal sections of *Adhatoda vasica* were cultivated on Murashige and Skoog (MS) medium with the divergent concentration of PGRs (Phytohormones) at innumerable frequencies to optimize the germination idiosyncrasy for induction, proliferation and rooting in the plant. The shoot induction tends to happen in the concentration of BAP + IBA (1.0mg/l+ 0.6mg/l). Which is supposed as the foremost concentration for shoot multiplication of excised explants in concentration of BAP+KN+IBA (2mg/l+1mg/l+0.5mg/l), For rooting the finest concentration of BAP+NAA (1mg/l+0.5mg/l) are respectively considerable. In the relevant study, nodal components were derived from wild plants and were operated as explants to prosper coherent micropropagation protocol for the aforementioned species. Murashige and Skoog (MS) medium supplemented was a worthy medium to induce and promote the growth of axillary bud.

Keywords: *Adhatoda vasica*, Nodal explants, MS medium, Micropropagation, Plant Growth Regulators.

INTRODUCTION

In the present era, medicinal plants are one of the absolute sources of drugs for the major population of the world. Indian health care system incorporates medicinal pluralism and Ayurveda is still dominating over the comparable modern era medicinal therapy, specially for the management of diversified chronic disease conditions (Wijesekera, 1991). The yet escalating global curiosity in Ayurveda has just resulted in stipulating for a giant raw

material of medicinal plants and also resulted a right stage for the plant parts accessible in optimum quantities to execute herbal preparations. Herbal medicine is the utmost amazing use of plant-based bio-diversity. Bajaj and Williams (1995) revealed in their study that medicinal plants play a key function in global health care systems.

Adhatoda vasica is an evergreen shrub, mostly known as Malabar nut that relates itself to acanthaceae family; exists entirely in the diversified locations of the world