



Evaluation and comparison of immunomodulatory potential of natural and *in vitro* cultivated high altitude medicinal plant *Eupatorium cannabinum* L.

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ABSTRACT

The increase in incidence of immunosuppression diseases demands alternative ways to combat the infections. Keeping this in view, the present study was undertaken to explore one of the plants *i.e.* *Eupatorium cannabinum* from our natural resources for its immunomodulatory potential. Animals treated with aqueous extracts prepared from native, *in vitro* shoot organ cultures and callus cultures were immunized with SRBC and their blood samples and spleen were collected to carry out tests for cell mediated and humoral immune responses *viz.*, CRLB cell enumeration, nitroblue tetrazolium reduction (NBT), inducible nitric oxide synthase (iNOS), phagocytic activity and development of anti SRBC antibody titres. Results revealed that shoot organ cultures possessed the maximum immunomodulatory activity.

Key words : *Eupatorium cannabinum*, Immunomodulation, Plant tissue culture

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INTRODUCTION

India has rich biodiversity and well developed traditional system of medicine which exploit herbal medicines. The natural products, especially the plants used in the traditional system of medicine for curing of diseases by using powdered mixture of a variety of plant materials roots, stems, leaves, flowers etc. are potential source of immunomodulatory compounds. Though in recent years a number of plants have been screened for their immunomodulatory activity but the plants of high altitude area still remain unexplored. Presently with increase in allergies and side effects of chemicals, drugs and lack of

medicines for some deadly diseases, and increase in the incidence of immunological disorders due to immunosuppressive diseases like AIDS, drug resistant, malaria, tuberculosis, cancer, gastrointestinal infections it becomes more important to pay attention to this field and develop new immunomodulators which are cost effective easily available and without side effects, have a wider range of curing and can be employed as anti immunosuppressants or immunopotentiators.

Keeping in view the above problem the present study was designed to study the immunomodulatory potential of *Eupatoriumcannabinum* L. (Asteraceae), a common wild plant growing in high altitude areas of Asia and Europe. This plant is used as a source of alternative medicine and febrifuge. Herbalists recognize its wound healing, cathartic, diuretic and anti-scorbutic properties and consider it a good remedy for purifying the blood, either used by itself, or in combination with other herbs. The leaves contain a volatile oil, which acts on the kidneys, and likewise some tannin and a bitter chemical principle which will cut short the chill of intermittent fever. Its chemical constituents have been investigated and pharmacological studies, which deals with the choleric and hepatoprotective properties have been demonstrated in the

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