ABSTRACT

Cancer is one of the most serious clinical problems, and is the second largest cause of death in humans around the world. Cancer is the result of interaction between genetic susceptibility and environmental toxins. Treatment of cancer can be done by surgery, radiation and chemotherapy. The present study “Study of Anticancer Activities of selected medicinal plants from Dasamoola and their comparison with micropropagated plants” deals with the activities of the plant extracts in inhibiting the process of carcinogenesis by their antioxidant property.

Dasamoola is an important combination of ten roots used in the formulation of Dasamoolarishtom with wide spectrum of medicinal properties. The two plants selected in this study are Solanum xanthocarpum Scrad. and Wendl. and Tribulus terrestris L. Micropropagation studies were carried out in these plants with different hormonal combinations resulted in the production of healthy in vitro plants. Somatic embryogenesis occurred in T. terrestris. In phytochemical screening, in vitro plants of S. xanthocarpum were found to possess more diosgenin content than ex vitro plants.

In vitro anti oxidant activity of these plants revealed that methanolic extracts of both plants had antioxidant potential. When compared to in vitro plants, wild plants had more activity. The efficiency of these plants in preventing inflammation were carried out by using carrageenan/ dextran induced acute and formalin induced chronic inflammatory models of mice paw oedema and results proved that these plants have anti-inflammatory activity. Both plants were cytotoxic to DLA and EAC cells and wild plants showed more cytotoxicity than in vitro plants. The anti-tumor activities of the plants were performed using DLA induced solid and EAC induced ascites tumor models, and results proved that these plants significantly prevented the tumor formation. Mechanisms of anticancer activities were determined by inducing apoptosis in MCF 7 human breast cancer cell lines and found that both plants are capable of inducing nuclear condensation and cell cycle arrest.
Protective studies of extracts of these plants were carried out by ethanol induced gastric damage, cisplatin induced nephrotoxicity and doxorubicin induced cardiotoxicity, nephrotoxicity and hepatotoxicity. Biochemical parameters were carried out in serum-CPK and LDH for cardiotoxicity, GOT.GPT and ALP for hepatotoxicity, for nephrotoxicity urea and creatinine. Tissue parameters worked out were SOD, catalase, GSH, GPx and the level of lipid peroxidation. Results indicate that the treatment with extract significantly restored the activity of these enzymes and reduction in MDA level suggesting the antioxidant potential of these extracts in ameliorating the damage induced by these agents. Histo-pathological evidence also supports the biochemical results.

Phytochemical studies have reported *S. xanthocarpum* for the presence of steroids and glycoalkaloids and *T. terrestris* for flavonoids. Present investigation revealed their antioxidant potential, anticancer activities and protective nature against chemotherapeutic drugs suggesting their possible application as adjuvants in cancer therapy.

**Key words:** Micropropagation, Anti-oxidant, Anti- cancer, Cisplatin, Doxorubicin.