

Summary of the Minor Research Project in Botany entitled

**“ISOLATION AND CHARACTERISATION OF THE GENOPROTECTIVE PRINCIPLE
FROM THE LEAF EXTRACT OF *ORTHOSIPHON THYMIFLORUS*”**

By

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Western Ghats is treasure land of many endemic and endangered medicinal plants . Kerala is blessed with a rich heritage of herbal medicinal practice and the first in the arena of authentic Ayurveda treatment because of the easy access of plant resources from Western Ghats. Herbal medicines are getting a great deal of attention and a large number of plants are being analyzed for its phytochemical constituents and biological activities. Many such researches are frolic in the field of cancer therapy. *Orthosiphon thymiflorus* (Roth) *Sleasen* is medicinal aromatic plant belongs to family Lamiaceae which is useful in erysipelas, dermatopathy such as scrabies, dermatitis and pruritus, haemorrhoids, wounds, ulcers and fever. The aim of the present study was to analyze the cytotoxic potential of the crude extract of the plant and its genoprotective effect against the genotoxicity induced by a commonly used insecticide, malathion in an *in vivo* model, *Swiss albino* mice and characterize the bioactive principle.

Methanol and hexane extract was prepared from the areal part of the plant by Soxhlet extraction. Antimutagenic potential of the solvent extracts were tested by three *in vivo* assays in mice bone marrow cells namely micronucleus (MN) assay, chromosome aberration assay (CA) and single cell gel electrophoresis or comet assay. Bone marrow cells and blood samples from peripheral vein were collected during the assay procedure. After the treatment period of 24 hrs, the control and treated animals were sacrificed by cervical dislocation and MNCs were collected for further assay procedure.

MN assay showed a significant induction of MN in polychromatic erythrocytes by the insecticide and the protective effect of both solvent extract by reducing the incidence of MN and also maintaining the normal ratio of PCE/NCE in bone marrow cells. In CA assay, the solvent extract increased the declined mitotic by the toxic effect of malathion. The aberrations caused by the insecticide were also decreased significantly by the solvent extracts revealing its protective effect. In comet assay, the genoprotective effect was confirmed in DNA level. Data from all the assays showed a significant ($p \leq 0.05$) genoprotective effect of both solvent extract. Phytochemical characterization of the compounds by spectroscopic (UV-Vis, FT-IR) as well as chromatographic techniques (HPLC, LC-MS, GC-MS) revealed the presence of a plethora of bioactive compounds having anticancer and antitumor properties.

The result confirmed the presence of bioactive principles in the of the crude extract of *Orthosiphon thymiflorus* and its genoprotection against the toxicity induced by malathion. Further purification and characterization may lead to some novel pharmacologically important compound from the plant.