

Abstract of the PhD Thesis

MOLECULAR CHARACTERIZATION AND ANTICANCER ACTIVITY OF FUNGUS *SCLEROTIUM STIPITATUM* BERK. ET. CURR. (NILAMANGA)

Ms. Alina K Sebastian
Research Scholar
Research Department of Botany
St Thomas College (Autonomous), Thrissur

Dr. Anto P V
Research Guide
Assistant Professor
St Thomas College (Autonomous), Thrissur

Cancer research is progressing toward the identification of anticancer agents from natural sources that may be employed as medicines or as supplements to existing treatment modalities. This is promoted since, as compared to standard chemotherapeutic drugs, they have less adverse effects. The fungus selected for present study is *S. stipitatum*, a very rare termite fungus that can be found only from old undisturbed termite nests. It has great significance among tribal people because of its medicinal properties. They used to preserve this fungus to treat various diseases like jaundice, cholera, stomach pain, arthritis etc.. But due to its rare occurrence and difficulty in locating them only limited studies have done in this species. Presently, it is included in the genus *Xylaria* but our molecular studies on fresh specimen reveals that it cannot be treated as any *Xylaria* sp. *S. stipitatum* has a unique separate species entity.

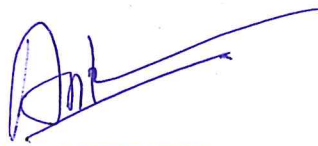
Secondary metabolite in plants and fungi are now being considered with high significance because of its medicinal properties. Preliminary phytochemical screening on *S. stipitatum* shows the presence of most number of compounds in its ethanol extract. And this extract was chosen for the further studies. The GC-MS and LC-MS analysis conducted reveals the presence of many bio- active compounds that are pharmaceutically very important.

To investigate the anticancer potential of the fungus, initially in- vitro cytotoxicity was done by trypan blue dye exclusion method in DLA and EAC cells. Then moved on to the animal experiments. It reveals that the ethanol extract of *S. stipitatum* is very efficient as an antitumor agent. The in vivo antioxidant study was conducted to find the antioxidant potential of the extract. The study proves that the extract provides the ability to withstand stress by enhancing the level of antioxidants in order to scavenge the free radicals. The in vivo anti-inflammatory activity of the extract was studied by the acute carrageenan induced inflammation and chronic formalin induced inflammation. The extracts significantly reduced the paw edema in both models in comparison with control untreated group.

Mycosynthesis of nanoparticles are now on the interest list of researchers since it is an economical and less harmful way of nanoparticle synthesis in comparison with physical and chemical synthesis. So, silver nanoparticles were synthesized using the aqueous extract of *S. stipitatum* and its characterization was done to confirm the presence of silver nanoparticles. The results are discussed and the major conclusions were given in the thesis as a separate chapter.

Key words: *Sclerotium stipitatum*, ethanol extract, antitumor, antioxidant, anti-inflammatory, mycosynthesis


Dr. Martin K. A.
Principal-in-Charge
St. Thomas College (Autonomous),
Thrissur - 680 001


Dr. ANTO P.V., Ph.D
Assistant Professor
Department of Botany
St. Thomas College
Thrissur - 680 001

