Proceedings of the International Conference on Innovations and Sustainable Research in Environment and Life Sciences

August 7th-9 th, 2018

EDITORS

DR. ANTONY AKHILA THOMAS., DR. SARLIN P J., DR. SEETHAL LAL S

DR. VIJAYASRE. A. S, DR. SREEJEKSHMY S. G

PG and Research Department of Zoology
Fatima Mata National College (Autonomous)
Kollam

ISBN 978-81-89152-06-2

COPPER NANOPARTICLES FROM *THOTTEA SILIQUOSA* (LAM.) DING HOU: THE PROMISING PROSPECTS IN GREEN CHEMISTRY

Jibi K., Athira M.&ShaijuP.N. *

Department of Botany, Fatima Mata National College, Kollam- 691001

*shaiju@fatimacollege.net

ABSTRACT

Nanotechnology has created a kind of revolution as this new area encompasses Physics, Chemistry, Material Science, Engineering along with Biology and Medicine. Nanoparticles may be of the same dimension as some biological molecules such as proteins and nucleic acids. They have been developed for use in the area of agriculture, where they can increase the efficiency and productivity of crops. Hence an attempt was made in the present investigation to explore the synthesis of copper nanoparticles both biologically and chemically with the medicinal plant Thottea siliquosa and by using sodium borohydride respectively. The study discusses the biologically and chemically synthesised copper nanoparticles from Thottea siliquosa and the characterisation using UV-VIS Spectroscopy and SEM; germination study using Triticum aestivumand its antibacterial activity. The presence of copper nanoparticles was confirmed by the spectroscopic examination.The diameter of chemically synthesised copper nanoparticle is approximately 50nm and the biologically synthesised one varying from 100nm to 500nm that is about 10 times larger than that of chemically synthesised copper nanoparticle. Both the nanoparticle possess negative impacts on the germination rate and its growth. The result indicated that even though they possessed antibacterial activity, at higher concentrations these nanoparticle have a growth inhibition activity.

KEYWORDS

Thottea siliquosqa, Copper nanoparticle, Triticum aestivum, Germination, Antibacterial activity

CHEMICAL PROSPECTING OF THE ROOTS OF *THOTTEASILIQUOSA* (LAM.) DING HOU, WITH SPECIAL EMPHASIS ON ANTIOXIDANT, ANTICANCEROUS AND DNA DAMAGE INHIBITION PROPERTIES

Sumayya F., Athira M. & ShaijuP. N.*

[1]*Department of Botany, Fatima Mata National College, Kollam- 691001*

*shaiju@fatimacollege.net

ABSTRACT

Plants are utilized globally as herbal medicine due to their therapeutic values. Identification of phytochemicals from plants gives a gateway for the development of new drugs. The main aim of the present study was to investigate invitro antioxidant potential, DNA damage inhibition and cytotoxicity of phytochemicals extracted from the roots of Thotteasiliquosa(Lam) Ding. Hou., the medicinal undershrub from the family Aristolochiaceae. The dried roots of T. siliquosa were powdered and extracted with distilled water and chloroform and subjected to phytochemical screening. The extracts were shown the presence phytochemicals like Alkaloids, Glycosides, Saponins, Phenol and Flavonoid compounds. Invitro antioxidant activity was analyzed by using DPPH and H_2O_2 assays. Both the extracts showed strong DPPH and H_2O_2 scavenging activities. The root extracts were found protecting the plant DNA from UV irradiation. Distilled water extract of plant root exhibited invitro cytotoxicity on tumor cells at concentration of 200µg/ml. These findings confirms the antioxidant, anticancerous and DNA damaging effects of the root extracts of T.siliquosa.

Keywords

Thotteasiliquosa, Phytochemicals, antioxidant, DPPH, H_2O_2 invitro cytotoxicity

NATURAL DYE FROM *THOTTEA DUCHARTREI* SIVAR., BABU & INDU: A PROMISING WINDOW IN GREEN CHEMISTRY

Amrutha T.R., Athira M., Shaiju P.N *

[1]*Department of Botany, Fatima Mata National College, Kollam- 691001*

*shaiju@fatimacollege.net

ABSTRACT

The focus on environmental concerns is increasingly causing the textile industry to explore natural sources of dyes as opposed to synthetic dyes. The aim of the study was to evaluate the performance of dyes extracted from root, leaves and flower of the plant Thottea dutchartrei belongs to family Aristolochiaceae. Most of the members in Thottea are aromatic and have medicinal values. In the present study, the dyeing pigments present in flowers, root and leaves of T.duchartrei were extracted. The UV, visible, and near infrared spectroscopic analysis of dyes yielded characteristic peaks corresponding to the colouring compound. The presence of flavonoids was indicated by chemical characterization of dye. Three types of mordants were used to set isolated dye on cotton fabric by forming a co-ordination complex and also studied the effect of fabric on three different methods of mordanting. Among thethree mordanting techniques, pre-mordanting method was good in terms of dyeing. Fastness properties and oil repellence of the dyed cotton were also tested. Here the post-mordanting sample yielded good result. Among the different dyes, dye from flower yielded promising results in terms of colour fastness.

Keywords

Thottea duchartrei, Dye, Mordants, Colour fastness