PAPER PRESENTATION
SUPPORTING DOCUMENTS

1.TITLE OF THE PAPER: Characterization, in vitro cytotoxic and antibacterial exploitation of green synthesized freshwater cyanobacterial silver nanoparticles

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Characterization, *in vitro* cytotoxic and antibacterial exploitation of green synthesized freshwater cyanobacterial silver nanoparticles

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Key words:
Freshwater cyanobacteria, silver nanoparticles, characterization, antimicrobial activity, cytotoxic activity.

ABSTRACT

Cyanobacteria-mediated silver nanoparticles synthesis approach has proven to be more efficient and eco-friendly in achieving biomedical applications compared to physical and chemical prototypes. In the present work, the silver nanoparticles were successfully synthesized by cell-free extract of freshwater cyanobacteria, i.e., *Chroococcus turgidus* and Characium typicum. The cyanobacterial silver nanoparticles (CSNPs) were characterized by UV-Vis spectroscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), and Fourier transform infrared (FTIR) analysis and were further tested for antibacterial and cytotoxic efficiency. The synthesis of CSNPs was confirmed through visible color change and shift of peaks at 430–445 nm by the UV-Vis spectroscopy. The size of CSNPs was between 22 and 34 nm and oval-shaped which were confirmed by SEM and TEM analyses. The FTIR spectra showed a new peak at the range of 3,400–3,460 cm^{-1} compared to control, confirming the reduction of silver nitrate. Furthermore, the antibacterial activity of CSNPs showed highest zone of inhibition with 6.9, 4.0, 2.0, and 3.0 mm against *Salmonella paratyphi*, *Escherichia coli*, *Klebsiella pneumonia*, and *Staphylococus aureus*, respectively, whereas *in vitro* cytotoxic activity of C. typicum and *C. turgidus* silver nanoparticles showed remarkable IC_{50} values with 43.3 and 40.9 ug/ml against MCF-7 breast cancer cell line and 20.8 and 55.7 ug/ml against HepG2 cancer cell, simultaneously.

INTRODUCTION

Nanoscience is an emerging field of nanobiotechnology, utilizing nanobased systems for various biomedical applications. The nanoparticles generally lie in the range of 10^{-9} nm with dimensions of 1–100 nm (Sharma *et al.*, 2016). Consequently, nanoparticles exhibit therapeutic properties because of their high surface volume, strong binding affinity, and their ability to easily diffuse into the cell (Sun *et al.*, 2014). Among other nanoparticles, silver nanoparticles have prudent specific conductivity and stability with unique therapeutic, antibacterial, and catalytic properties which makes them important in nanooncology and in the diagnosis and treatment of cancer through nanodevices and therapeutic agents (Husain *et al.*, 2015). The synthesis of nanoparticles through physical and chemical processes consumes extreme energy, pollutes the environment, produces toxic chemicals that stick to the surface of particles, and which have inimical effects in medical applications (Nadagouda and Varma, 2008). Green synthesis of nanoparticles is convenient over physical and chemical methods of nanoparticle synthesis, since biologically synthesized nanoparticles are more eco-friendly and energy efficient for the synthesis of inorganic nanoparticles (Jeffryes *et al.*, 2015; Mittal *et al.*, 2013) and economically feasible compared to physical and chemical synthesis.

Green synthesis of nanoparticles is generally carried out by the living forms of bacteria, fungi, viruses, plant extracts, plant parts, algae, yeast, and cyanobacteria (Keskin *et al.*, 2016; Kharissova *et al.*, 2013; Pirtarighat *et al.*, 2019; Swaminathanâlyer, 2013). Among the biological systems, cyanobacteria are preferable since they can be easily cultivated with a high growth rate and they reduce silver ions expeditiously (Roychoudhury *et al.*, 2016). Cyanobacteria are one of the prominent bio-factories that produce a wide range of bioactive compounds, i.e., secondary metabolites, like minerals, lipids, proteins, polysaccharides, carbohydrates, carotenoids, and

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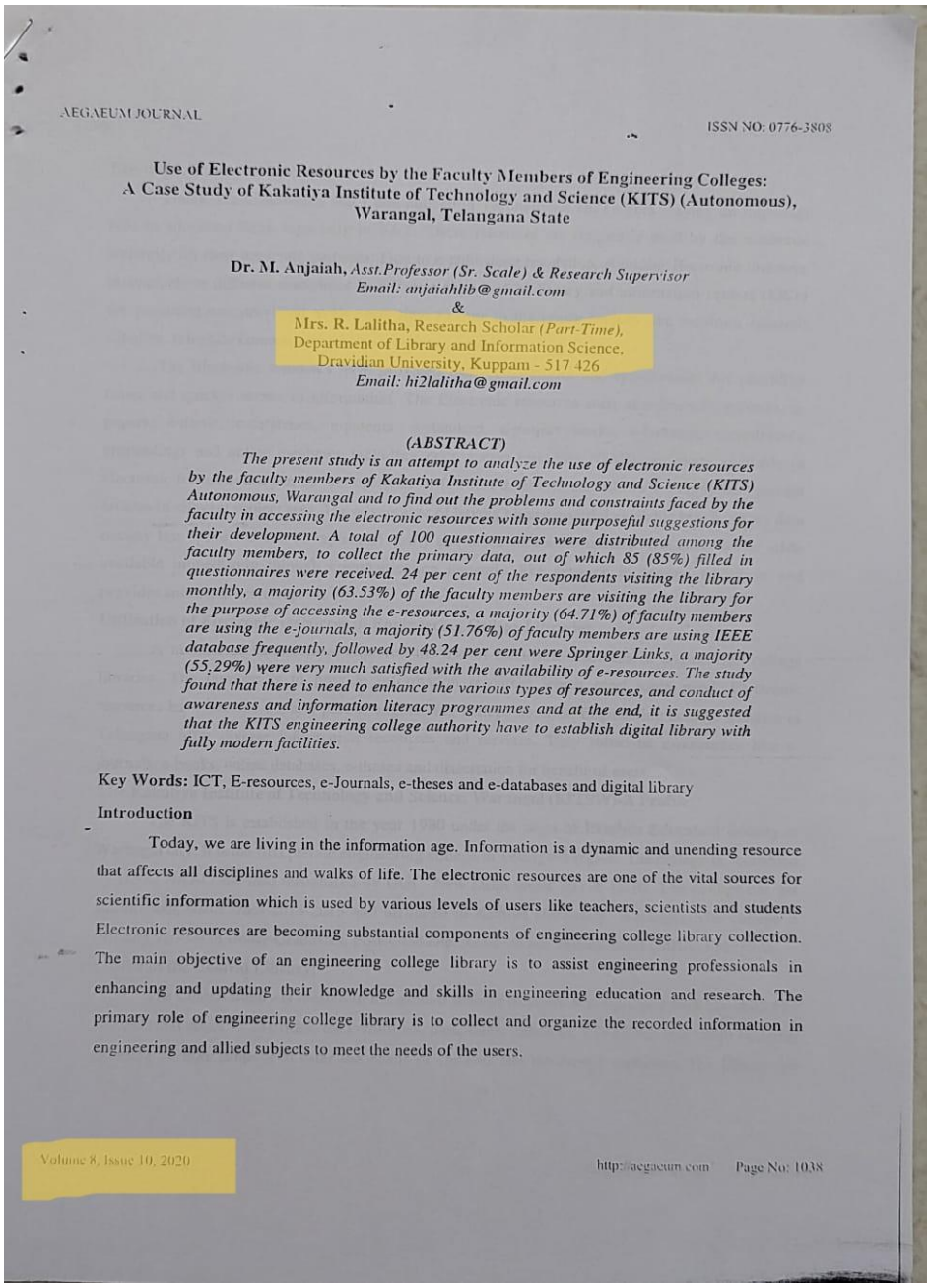
2. TITLE OF THE PAPER: Use of Electronic Resources by the faculty members of engineering colleges: A case study of Kakatiya Institute of Technology and Science (KITS) (Autonomous), Warangal, Telangana State

NAME OF THE AUTHOR: DR. R. Lalitha



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Use of Electronic Resources by the Faculty Members of Engineering Colleges: A Case Study of Kakatiya Institute of Technology and Science (KITS) (Autonomous), Warangal, Telangana State

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(ABSTRACT)

The present study is an attempt to analyze the use of electronic resources by the faculty members of Kakatiya Institute of Technology and Science (KITS) Autonomous, Warangal and to find out the problems and constraints faced by the faculty in accessing the electronic resources with some purposeful suggestions for their development. A total of 100 questionnaires were distributed among the faculty members, to collect the primary data, out of which 85 (85%) filled in questionnaires were received. 24 per cent of the respondents visiting the library monthly, a majority (63.53%) of the faculty members are visiting the library for the purpose of accessing the e-resources, a majority (64.71%) of faculty members are using the e-journals, a majority (51.76%) of faculty members are using IEEE database frequently, followed by 48.24 per cent were Springer Links, a majority (55.29%) were very much satisfied with the availability of e-resources. The study found that there is need to enhance the various types of resources, and conduct of awareness and information literacy programmes and at the end, it is suggested that the KITS engineering college authority have to establish digital library with fully modern facilities.

Key Words: ICT, E-resources, e-Journals, e-theses and e-databases and digital library

Introduction

Today, we are living in the information age. Information is a dynamic and unending resource that affects all disciplines and walks of life. The electronic resources are one of the vital sources for scientific information which is used by various levels of users like teachers, scientists and students Electronic resources are becoming substantial components of engineering college library collection. The main objective of an engineering college library is to assist engineering professionals in enhancing and updating their knowledge and skills in engineering education and research. The primary role of engineering college library is to collect and organize the recorded information in engineering and allied subjects to meet the needs of the users.

3. TITLE OF THE PAPER: Synthesis and biological evaluation of aryl sulfonyl linked isoxazol-(pyridin-4-yl) pyrazolo [1,5-a] pyrimidines as cytotoxicity agents

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Data Article

Synthesis and biological evaluation of aryl sulfonyl linked isoxazol-(pyridin-4-yl)pyrazolo [1,5-a]pyrimidines as cytotoxicity agents

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ABSTRACT

A new bunch of aryl sulfonyl linked isoxazol-(pyridin-4-yl)pyrazolo [1,5-a]pyrimidine compounds (**11a–j**) have been designed, developed and their structure were characterized by analytical techniques. Further, compounds were tested for their cytotoxicity activities towards human cancer cell lines like SiHa (Cervix cancer), A549 (Lung cancer), MCF-7 (Breast cancer) and Colo-205 (Colon cancer) using MTT assay and compared with standard drug, etoposide. Among all, compounds **11a, 11b, 11c, 11d** and **11e** demonstrated good cytotoxicity effects as standard drug. Specifically, two compounds (**11a** and **11e**) displayed more potent activity.

Specifications table

Subject area	Organic Chemistry, Biochemistry, Spectroscopy
Compounds	Aryl Sulfonyl Linked Isoxazol-(pyridin-4-yl)pyrazolo [1,5-a]pyrimidine as Cytotoxicity Agents
Data category	Spectral
Data acquisition format	NMR, HRMS(ESI)
Data type	Analyzed
Procedure	Synthesis and Biological Evaluation of Aryl Sulfonyl Linked Isoxazol-(pyridin-4-yl)pyrazolo [1,5-a]pyrimidine as Cytotoxicity Agents
Data accessibility	Manuscript and supplementary data enclosed with this article

1. Rationale

Nitrogen-heterocyclic moieties are played a significant function in real life and biological progressions. The pyrazolo [1,5-a] pyrimidines are well known of fused heterocyclic building blocks represent useful chemotherapeutics and had great attention of medicinal chemist because of its biological applications.They are structural and pharmacologically similar to purine bases [1,2]. The pyazolo [1,5-a]pyrimidine skeleton consisted heterocyclic compounds displayed a broad range of biological applications including antimicrobial [3], CNS depressant [4], tuberculostatic [5], antihypertensive [6], neuroleptic [7],analgesic [8], antitumor [9], anti-inflammatory [10] and anti-viral [11]. Among, the Dinaciclib (**1**, Fig. 1) is contained pyrazo-pyrimidine unit as back-bone of the

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