



A.V.V.M. Sri Pushpam College (Autonomous)

Poondi– 613 503, Thanjavur-Dt, Tamilnadu

(Affiliated to Bharathidasan University, Tiruchirappalli – 620 024)

**3.7.1 Number of Collaborative activities per year
for research/ faculty exchange/ student
exchange/ internship/ on –the-job training/
project work**

Collaborating Agency:

**Dr. N. Thajuddin, Associate Professor and Head,
Department of Microbiology, Bharathidasan University,
Tiruchirappalli, Tamil Nadu.**



Dr. A. PANNEERSELVAM

Associate Professor and Head (Rtd.),
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Dr. N. THAJUDDIN

Associate Professor
Department of Microbiology,
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Tiruchirapalli – 24.
TamilNadu, India.



Date: 28.06.2018

LINKAGE

For the year 2018-2019

Between

- | | | |
|--|---|---|
| 1. Dr. A. Panneerselvam,
Associate Professor and Head (Rtd.),
PG & Research Department of Botany
and Microbiology
A.V.V.M Sri Pushpam College
(Autonomous), Poondi – 613 503. | & | 2. Dr. N. Thajuddin
Associate Professor
Department of Microbiology
Bharathidasan University
Tiruchirapalli – 24.
TamilNadu, India. |
|--|---|---|

Considering the significance of the noble cause for the student community, we have come forward to collaborate with each other to exchange research knowledge, expertise, laboratory and library facilities to the process of scientific research and education in the field of Biological science. The parties (mentioned above as 1. & 2.) have had preliminary discussion in this matter and have ascertained areas of broad consensus. The parties now therefore agreed to enter in writing these avenues of consensus, under a flexible linkage, and this project aims to fill the gap between knowledge demand and subject expertise related to the mentioned field.

Joint Responsibilities

- Sharing of laboratory facilities, library resources, database etc.,
- Joint Publication of research articles, books, magazines, bulletins etc.,
- Jointly organizing conferences, seminars, symposia and workshops.
- Submitting joint proposals for research funding from agencies like UGC, CSIR, DST and TNSCST.
- Patenting Microbes, Plants patents Procedure, Product development and Novel equipments in Biological sciences (Indian and Foreign Patenting)


Dr. A. Panneerselvam


Dr. N. Thajuddin

Phytochemical Screening and Antimicrobial Studies in Leaf Extracts of *Indigofera aspalathoides* (Vahl.)

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ABSTRACT

Introduction: In traditional Indian herbal medicine, the plant *Indigofera aspalathoides* (Vahl.) has been used to treat various human ailments. **Methods and Results:** Various phytochemical compounds (Rf value) such as Tannin (1.14), Flavonoid (1.14), Saponin (0.87), Sterol (0.88) and Phenol (0.86) were found in the leaf extract. The antimicrobial effects of the phytoconstituents were examined for three bacterial and fungal species. The highest anti-bacterial and anti-fungal activities were found in flavonoid compound, where the maximum zone of inhibition was recorded in *Staphylococcus aureus* 18mm compared to positive control chloramphenicol (24mm). 13mm observed in *A. flavus* and *A. ochraceus* where positive control streptomycin exhibits 18mm. GC-MS analysis revealed the presence of three major compounds in 8 α (2H)-Phenanthrenol, 7-ethenyldodecahydro-1,1,4 α , 7-tetramethyl-, acetate, [4 α s(4 $\alpha\alpha$, 4b α , 7 α , 8 $\alpha\alpha$, 10 $\alpha\alpha$)], Benzoic acid, 4-methyl-, 2-oxo-2- phenylethyl ester and Cyclohexanol, 5-methyl-2-(1-methylethyl)-, [1S-(1 α ,2 α ,5 α)] in the crude extracts. The preparative HPLC analysis proved the presence of single peak from the crude flavonoid compounds, where the absorption maximum was between 207-290nm exhibited by the UV spectrum analysis. FTIR spectrum confirmed the presence of amide group, phenol group, carboxylic acid, alkynyl, alkene and aromatic ring. NMR studies proved the presence of phenyl group, methyl group and H₂C-CH group and their molecular weight recorded as 353 through the mass spectrum analysis. **Conclusion:** The identified compound considered as the vital compound to design the "green antimicrobial drugs".

Key words: *Indigofera aspalathoides*, Antimicrobial activities, HPLC, GC-MS, NMR, MS.

INTRODUCTION

Plants have been an important source of medicine for thousands of years. Various plant parts like leaves, flowers, fruits, stem and root have their own bioactive compounds used to treat many diseases dated back to prehistory and people of all continents have this old tradition.¹⁻² Today, scientists and the general public recognize their value as a source of new or alternative medicinal products. Recently, wide array of research highlight the potential health beneficial principles from phytal sources. Herbal medicine is based on the natural plant products and that can promote health and alleviate illness. Modern drugs or conventional medicines are often viewed as impersonal, emphasizing crisis intervention. The World Health Organization (WHO) also considers phytotherapy in its health programs and suggests basic procedures for validation of drugs from plant origin³ and estimates that up to 80% of people still rely mainly on traditional remedies such as herbs for their medicine.⁴ Approximately 25-50% of current pharmaceuticals are derived from plants, the surge to produce 'Green Medicine' from natural sources are gradually increased.

Herbal drugs play an important role in health care programmes in developing countries like India⁵ and often been referred to as the Medicinal Garden of the world. The clinical use of plants described in Indian Vedas for curing different diseases. At this stage, India has a unique position in the world where a number of recognized Traditional systems of medicine i.e. Ayurveda, Siddha, Unani, Homeopathy, Yoga and Naturopathy⁶ exists. Indigenous plants are reservoirs of various metabolites and provide unlimited source of important chemicals that have diverse biological properties.⁷ Plant and its derivatives have long history to clinical relevance as a source of potential general chemotherapeutic agents.⁸

Phytochemical tests are considered as the one of the standard pharmacognostical parameter.⁹ Phytochemicals are actually organic compounds which possess medicinal properties.¹⁰ The steadily increasing microbial resistance to existing drugs was a serious problem in antimicrobial therapy and necessitates continuing research into new classes of antimicrobials.¹¹⁻¹² One way to prevent antibiotic

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