

Linkages 2021

Sr. No.	Name of the collaborating agency / institution / industry / corporate house with whom the MoU / collaboration / linkage is made, with contact details	Initiating Department / Committee	Year
1.	Department of Chemistry, Rao Bahadur Narayan Borawake College, Ahmednagar.	Chemistry	2021
2.	Holy Cross College, Nagarcoil, Tamilnadu	Botany	2021
3.	Amity Institute of Biotechnology, Amity University, Panvel, Mumbai.	Botany	2021
4.	Department of Botany, Ahmednagar College, Ahmednagar.	Botany	2021
5.	Institution's Innovation Council, St. Joseph University, Dimapur, Nagaland	Botany	2021



ZnO-NPs catalyzed condensation of 2-aminothiophenol and aryl/alkyl nitriles: Efficient green synthesis of 2-substituted benzothiazoles

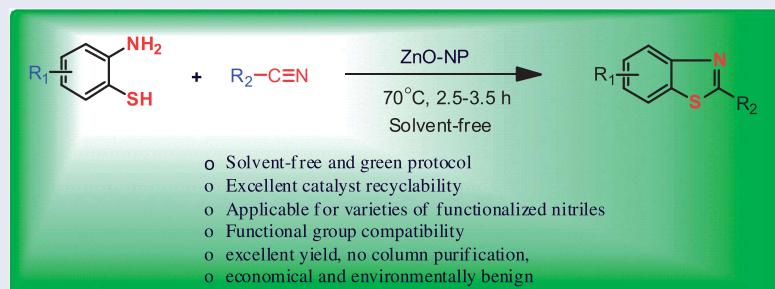
Kiran D. Dhawale^a, Ajit P. Ingale^b, Sandeep V. Shinde^c, Nitin M. Thorat^d, and Limbraj R. Patil^d

^aDepartment of Chemistry, Rao Bahadur Narayan Borawake College, Ahmednagar, India; ^bDepartment of Chemistry, Dada Patil College, Ahmednagar, India; ^cDepartment of Chemistry, Pratibha Niketan College, Nanded, India; ^dDepartment of Chemistry, Maharaja Jivajirao Shinde College, Ahmednagar, India

ABSTRACT

The synthesis of 2-substituted benzothiazoles has been described using ZnO-nanoparticles as a catalyst. The condensation of 2-aminothiophenol and aryl/alkyl nitriles resulted in the formation of various 2-substituted benzothiazoles under solvent-free reaction conditions. The library of 2-substituted benzothiazoles has been synthesized in good to excellent yield. The reaction has shown a wide range of functional group compatibility for both varyingly substituted 2-aminothiophenols and nitriles. The protocol has many advantages such as faster reaction rate, mild reaction conditions, various functional group compatibility, excellent yield, solvent-free reaction conditions, easy recovery of materials, and excellent catalyst recyclability, among others. The various advantages of this protocol make it a more feasible, economical, and environmentally benign process.

GRAPHICAL ABSTRACT



ARTICLE HISTORY

Received 30 November 2020


KEYWORDS

2-Amino thiophenol;
benzothiazoles; nitriles;
solvent-free;
ZnO-nanoparticles

Introduction

The synthesis of benzothiazoles structural scaffolds has been a topic of enormous interest in recent decades due to their presence in a myriad of bioactive molecules and

CONTACT Kiran D. Dhawale ✉ dhawale.kiran@rediffmail.com Department of Chemistry, Rao Bahadur Narayan Borawake College, Ahmednagar, Maharashtra 413709, India; Limbraj R. Patil ✉ limbrajp@gmail.com Department of Chemistry, Maharaja Jivajirao Shinde College, Ahmednagar, Maharashtra 431701, India.

 Supplemental data for this article can be accessed on the [publisher's website](#).



Phone : 04652- 261473
Fax : 04652-260704

HOLY CROSS COLLEGE

(AUTONOMOUS)

(Re-Accredited with 'A' Grade (CGPA3.35) by NAAC)

Nagercoil - 629 004.

Kanyakumari Dt., Tamilnadu

E-mail : holycrossngo@yahoo.com

website : www.holycrossngl.edu.in

CERTIFICATE

This is to certify that Dr. Asha Bhausaheb Kadam, Assistant Professor ,
Department of Botany, Rayat Shikshan Santha's, Dada Patil Mahavidyalaya,
Karjat, Ahmednagar Dist., Maharashtra, served as a resource person and
delivered a talk on "My-Story- Motivational Session by Successful Innovator" -
How to apply for patent, in the Webinar organized by the Department of
Botany, Holy Cross College (Autonomous), Nagercoil - 4 in collaboration with
IICHCC, on 29.10.2021.

Thanking you,

Nagercoil,

29.10.2021

Yours sincerely,

S. Anandapriya K. S. S. S.

PRINCIPAL
Holy Cross College
(Autonomous)
Nagercoil - 629 004.

Research Article

Target related *in silico* analysis of Bergenin and tuberculosis managementVirupaksha A. Bastikar¹, Alpna Bastikar², Pramodkumar P. Gupta³, Sandeep R. Pai⁴ and Santosh S. Chhajed⁵¹Professor, Amity Institute of Biotechnology (AIB), Amity University, Mumbai-Pune Expressway Bhatan 410206, Post Somathne, Panvel, Mumbai, Maharashtra, India²Research Associate, Department of computer Aided Drug Design, Navin Saxena Research and Technology Pvt. Ltd., Gandhidham, Gujarat, India³Assistant Professor, School of Biotechnology and Bioinformatics, D. Y. Patil Deemed to be University, Navi Mumbai, Maharashtra, India⁴Assistant Professor, Department of Botany, Rayat Shikshan Sanstha's Dada Patil Mahavidyalaya, Karjat, Dist: Ahmednagar, 414402, Maharashtra, India⁵Associate Professor, Department of Pharmaceutical Chemistry, Bhujbal Knowledge City, MET's Institute of Pharmacy Adgaon, Nashik, Maharashtra, India

(Received: June 2020 Revised: October 2020 Accepted: November 2020)

Corresponding author: Virupaksha A. Bastikar. Email: vabastikar@gmail.com

ABSTRACT

Introduction and Aim: Tuberculosis (TB) is a global health concern, claiming two million lives every year. Although an oldest known human infectious disease, researcher is falling short of giving out an effective and reliable vaccine or therapy. The current antimycobacterial drugs include Isoniazid, Ethambutol, Rifampicin and Pyrazinemamide available in market, but most of these are known to have certain adverse effects. Hence there is an increase in demand for natural products with anti-tuberculosis activity with no or limited side effects. Indian traditional systems of medicine have a plethora of promising plants for treatment of tuberculosis, of which *Bergenin* is the most well established and extensively used compound. The main aim of this research was to investigate the role of Bergenin as an anti-tuberculosis agent with the help of *in-silico* analysis and protein interaction studies.

Materials and Methods: In the present study 04 known 3-dimensional crystallized anti-tubercular drug target is considered and retrieved from PDB. Drug Isoniazid, Ethambutol, Rifampicin, Pyrazineamide and phytochemical Bergenin were retrieved, sketched and geometrically optimized. Molecular docking is carried to understand the binding mode and its core interactions. ADMET properties were calculated in assessment of the toxicity. Protein-protein interactions and enrichment analysis is carried out to understand the biological process involved with rpsA protein.

Results: In the present study other than Rifampicin, Bergenin reported with better binding energy and similar pharmacophoric interaction pattern as compared to all the 04 indigenous inhibitors. The PPI network and enrichment analysis predicts the plausible biological process involved with rpsA protein and can be further targeted in treatment of tuberculosis.

Conclusion: The results showed that Bergenin was better than and competent with the existing drugs and can be used as an anti-tuberculosis agent if studied *in-vitro* and *in-vivo* for its activity.

Keywords: Tuberculosis; Bergenin; *in silico*; proteomics

INTRODUCTION

Tuberculosis (TB) is a world-wide concern, costs multi-million lives each year (1). Being the most primitive known human infectious disease but, still lack of effective and decisive vaccine or therapy. Bacillus Calmette Guerin (BCG) developed in 1921 is the only known vaccine, but fails to protect against adult pulmonary TB (2).

Current line of therapy for TB, adopts DOTS (Directly Observed Treatment Short-course), which involves the use of multiple antibiotics and a lengthy regimen (3, 4). This may attract significant risk for the future generation to be drug resistant. It has been reported that, most of the countries are under threat by multiple drug-resistant (MDR) and extremely

drug-resistant (XDR) strains of *Mycobacterium tuberculosis* (M. tb) (3, 4). These antibiotics have potential to cause serious hepatic and immune problems and also tend to eliminate antigen-specific T cells (5, 6) which further may result in hyper susceptibility (6, 7). In view of this, there is continuous research is going on in search of an alternate, alternate equally or more potent drugs.

The current antimycobacterial drugs include isoniazid, ethambutol, rifampicin and Pyrazinemamide available in market, but most of these are known to have certain adverse effects. World Health Organization (WHO) and International Union against Tuberculosis and Lung Disease (IUATLD) recommend the replacement of single-drug preparations by fixed-dose combination



Rayat Shikshan Sanstha's
Dada Patil Mahavidyalaya, Karjat

DEPARTMENT OF BOTANY

Year 2021-22

Linkages and Collaboration

REPORT

The Department of Botany has undertaken collaborative activities in association with faculties from different colleges in the state in this academic year. The aim is to establish a bridge between different faculties and share their knowledge for the upgradation of undergraduate and post graduate students of the department. The lectures taken under collaborations can be summarized as follows :

Sr. No.	Name of the activity	Faculty	College	No. Of beneficiaries
1.	NET SET Guidance in Life Sciences	Mr. Girish Kukreja	Dept. of Microbiology New Arts, Commerce and Science College, Ahmednagar	435
2.		Mr. Suresh Palve	Dept. Of Botany, T.C. College, Baramati.	
3.	Alumni Lecture series	Dr. B.K. Avchar	Vidya Pratishthan's Arts, Comm. & Sci. College, Baramati.	25
4.		Ms. Rani Shaikh	New Arts, Comm. And Sci. College, Parner	25
5.		Mr. S.A. Palve	Dept. Of Botany, T.C. College, Baramati.	32
6.		Mr. Innus Sayyed	Gandhi Arts, Sci. & Comm. College, Kada	37
7.		Mr. Amin Sayyed	Arts and Sci. College, Dhawalpuri	28
8.		Dr. Jalinder Bagal	Arts & Comm. College, Warwand, Daund	22
9.	Faculty & Student Exchange Program	Dr. Abhijit Kulkarni	Dept. Of Botany, Ahmednagar College, Ahmednagar.	75
10.		Dr. Digamber Ahire	Dept. Of Botany, New Arts, Comm. & Science College, Ahmednagar.	
11.	Virtual talk on " Biodiversity and Taxonomical Aspects in Angiosperms"	Dr. Avinash Adsul	Art, Comm. And Science College, Dept. Of Botany, Jawhar.Dist. Palghar.	55
12.	Career Guidance in Botany	Dr. Mansinghraj Nimbalkar	Dept. Of Botany, Shivaji University, Kolhapur.	262

Even our faculties are involved in collaborative activities in the academic year like Tree census activity with the Karjat Nagar panchayat, karjat, As resource person for guest lectures undertaken at different occasions. etc.

Head

Department of Botany
Dada Patil Mahavidyalaya, Karjat



St. JOSEPH UNIVERSITY

Private University Established Under Nagaland Govt. Act No.6 of 2016

Recognized by University Grants Commission (UGC)

Approved by All India Council for Technical Education (AICTE)

Virgin Town, Ikishe Model Village, Dimapur, Nagaland, India.



INSTITUTION'S INNOVATION COUNCIL

Organizes

One Day Webinar on

PROCESS OF FILING PATENTS

Appreciation Certificate

This is to certify that **Dr. ASHA KADAM, Assistant Professor of Botany, Dada Patil Mahavidyalaya, Ahmednagar, Maharashtra** has acted as a Resource Person and delivered a speech in the **One Day Webinar on "PROCESS OF FILING PATENTS"** organised by Institution's Innovation Council, St. Joseph University, Dimapur, Nagaland on 31st August, 2021.

Dr. M. SELLADURAI
Convener

Dr. A. ANTHONISAN
Registrar

Dr. D. GNANADURAI
Vice Chancellor