



## VAAGDEVI DEGREE & PG COLLEGE

Department of CHEMISTRY

STUDENT PROJECT WORK

Class : B.Sc - CHEMISTRY  
Subject : CHEMISTRY  
Title of the project : Analysis of spectral data  
Project Supervisor : Dr. T. Suresha  
Academic year : 2016 - 17  
Students Name : TEAM-B

1. L. Karthik
2. S. Divya Kumari
3. N. Jyothsna
4. E. Dileep kumar
5. B. Sandeep.



*A. Subhadra*

Principal

VAAGDEVI DEGREE & P.G. COLLEGE  
Kishanpura, Hanamkonda.

Our Department of Chemistry had introduced a project to the students on the topic Analysis of spectral data under the supervision of Dr. T. Suritha.

\* In this project we provided spectral data through which students can analyze and concluded various compounds based on spectral data.

### TEAM-A

1. Tasleen Sultana
2. Manohari
3. E. Vikram
4. A. Pravalika
5. B. Prashanth



A. Subrahmaniam  
Principal

TEAM - B

1. L. Karthik
2. S. Divya Kumari
3. N. Jyothsna
4. E. Deelip Kumar
5. B. Sandeep



*A. Subhadra*

Principal

**VAAGDEVI DEGREE & P.G. COLLEGE**

Kishanpura, Hanamkonda.



## VAAGDEVI DEGREE & PG COLLEGE

Department of CHEMISTRY

STUDENT PROJECT WORK

Class : B.Sc - Chemistry  
Subject : CHEMISTRY  
Title of the project : Analysis of spectral Data  
Project Supervisor : Dr. P. Sunitha  
Academic year : 2016 - 17  
Students Name : TEAM-A

1. T. Sultana
2. A. Manohar
3. E. Vikram
4. A. Pravalika
5. B. Prashanth



*A. Subhadharani*  
Principal  
VAAGDEVI DEGREE & P.G. COLLEGE  
Kishanpura, Hanamkonda.

# PROJECT WORK

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Our department had conducted a Project to the Post graduation students on the topic Microwave Assisted Synthesis of Hybrid Heterocyclics as a potential Anti cancer agents.

Name of the students:

1. G. Nikhitha
2. K. Raju
3. D. Ravinder
4. S. Anusha
5. T. Rajasri
6. D. Swapna
7. D. Swasnoopa



*A. Subhadra*  
Principal  
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Kishanpura, Hanumakonda.

Scientific paper

# Microwave-assisted Synthesis of Hybrid Heterocycles as Potential Anticancer Agents

Avula Srinivas,\* Malladi Sunitha, Kammachichu Raju, Banothu Ravinder, Siluveru Anusha, Thallapalli Rajasri, Pothuganti Swapna, Dupa Sushmitha, Deva Swaroopa, Gurala Nikitha and Chakunta Govind Rao

Department of Chemistry, Vaagdevi Degree & PG College  
Kishanpura, Warangal, Telangana, India 506001

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Received: 24-12-2016

## Abstract

In a one pot procedure, a series of novel hybrid heterocycles **6a–g** and **7a–g** were prepared by condensation of (3*aS*,4*S*,6*S*,6*aS*)-6-((1-(4-chlorophenyl)-1*H*-1,2,3-triazol-4-yl)methoxy)-2,2-dimethyltetrahydrofuro[3,4-*d*][1,3]dioxole-4-carbaldehyde **5** with mercapto acids and primary amines in the presence of ZnCl<sub>2</sub> under both microwave irradiation and conventional heating conditions. Compound **5** was prepared from di-acetone D-mannose *via* a click reaction, primary acetonide deprotection and oxidative cleavage. Characterization of new compounds has been done by IR, NMR, MS and elemental analysis. Anticancer activity of the compounds has also been evaluated.

**Keywords:** D-mannose, click reaction, cyclisation, anticancer activity

## 1. Introduction

1,2,3-Triazoles are one of the most important classes of heterocyclic organic compounds, which are reported to be present in a plethora of biologically active compounds, useful for diverse therapeutic areas.<sup>1</sup> The 1,2,3-triazole motif is associated with diverse pharmacological activities, such as antibacterial, antifungal, hypoglycemic, antihypertensive and analgesic properties. Polysubstituted five-membered aza heterocycles rank as the most potent glycosidase inhibitors.<sup>2</sup> Further, this nucleus in combination with or in linking with various other classes of compounds such as amino acids, steroids, aromatic compounds, carbohydrates etc., became prominent in having various pharmacological properties.<sup>3</sup> 1,2,3-Triazole modified carbohydrates have become easily available after the discovery of the Cu(I)-catalyzed azide-alkynes 1,3-dipolar cycloaddition reaction<sup>4</sup> and quickly became a prominent class of non-natural sugar derivatives. The chemistry and biology of triazole modified sugars is dominated by triazole glycosides.<sup>5</sup> Therefore, the synthesis and investigation of biological activity of 1,2,3-triazole glycosides is an important objective, which also received a considerable attention by the medicinal chemists.

Thiazolidinones and 1,2,3-triazoles represent important classes of drugs in medicinal chemistry. They are among the most extensively investigated compounds by biochemists and medicinal chemists.<sup>6</sup> Thiazolidinones in particular show interesting anticancer,<sup>7</sup> anti-HIV,<sup>8</sup> tuberculostatic,<sup>9</sup> antihistaminic,<sup>10</sup> anticonvulsant,<sup>11</sup> antibacterial,<sup>12</sup> and anti arrhythmic<sup>13</sup> activities.

So called hybrid molecules have been shown to be highly active and effective in medicinal chemistry. Synergistic effects are obtained *via* hybridization of two different bioactive moieties with complementary pharmacophoric functions, or with different modes of action.<sup>14</sup> The confirmation of this hypothesis has been well established in previous studies of 4-thiazolidinones coupled with other heterocyclic fragments,<sup>15</sup> *i.e.* resulting in high anti tumor activity.

Microwave irradiation is an alternative heating technique based on the transformation of electromagnetic energy into heat. Often this method increases the rate of chemical reactions<sup>16</sup> and results in higher yields. In recent years, multi component reactions (MCRs)<sup>17</sup> have received interesting attention due to their simplicity, efficiency, atom economy, shortened reaction times, and the possibility for diversity oriented synthesis.

## PROJECT WORK

Our department of chemistry had introduced a project work for the students of post graduates on the topic - "Synthesis & invitro study of hybrid Heterocyclics as a potential Nematicidal agents", under the supervision of

### Name of the students

1. G. Nikhitha
2. K. Raju
3. D. Ravinder
4. S. Anusha
5. T. Rajassi
6. D. Swapna
7. D. Swaroopa



A. Subudhalam

A. Srinivas,<sup>a,\*</sup> M. Sunitha,<sup>a</sup> P. Karthik,<sup>a</sup> G. Nikitha,<sup>a</sup> K. Raju,<sup>a</sup> B. Ravinder,<sup>a</sup> S. Anusha,<sup>a</sup> T. Rajasri,<sup>a</sup> D. Swapna,<sup>a</sup> D. Swaroopa,<sup>a</sup> K. Srinivas,<sup>a</sup> and K. Vasumathi Reddy<sup>b</sup>

<sup>a</sup>Department of Chemistry, Vaagdevi Degree and PG College, Kishanpura, Warangal, Telangana 506001, India

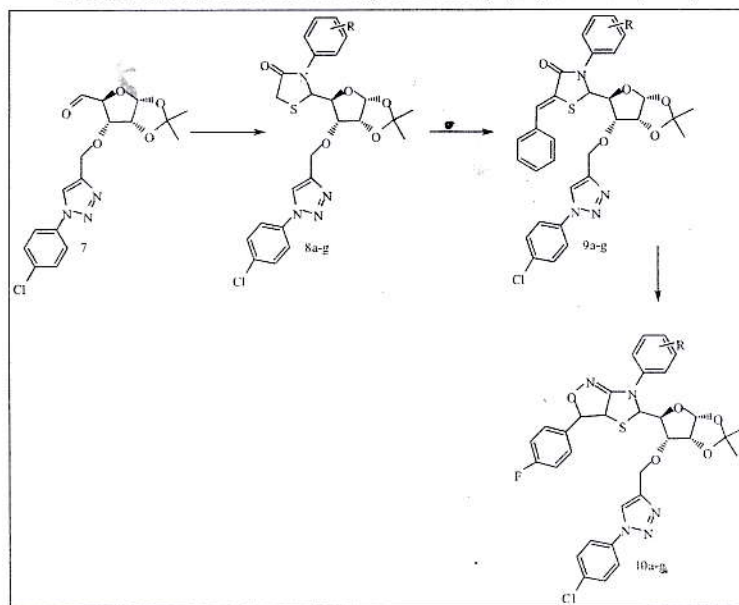
<sup>b</sup>Department of Zoology, Vaagdevi Degree and PG College, Kishanpura, Warangal, Telangana 506001, India

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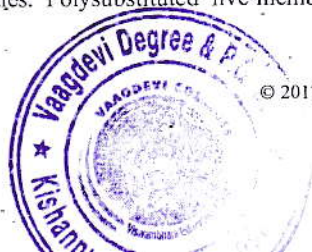
A series of novel 5-((3aR,5S,6S,6aR)-6-((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methoxy)-2,2-dimethyltetrahydrofuro[2,3-d][1,3]dioxol-5-yl)-3-(4-fluorophenyl)-6-phenyl-3,3a,5,6-tetrahydroisoxazolo[3,4-d]thiazoles **10a-g** were synthesized by the reaction of chalcone derivatives of 2-((3aR,5S,6S,6aR)-6-((1-(4-chlorophenyl)-1H-1,2,3-triazol-4-yl)methoxy)-2,2-dimethyltetrahydrofuro[2,3-d][1,3]dioxol-5-yl)-3-phenylthiazolidin-4-one **9** with hydroxylamine hydrochloride. The chemical structures of newly synthesized compounds were elucidated by IR, NMR, MS, and elemental analysis. The compounds **10a-g** were evaluated for their nematicidal activity against *Dietylenchus myceliophagus* and *Caenorhabditis elegans*; compound **10e** and **10f** showed appreciable nematicidal activity. Further, the compounds **10a-g** were screened for their antifungal activity against *Candida albicans* (ATCC 10231), *Aspergillus fumigates* (HIC 6094), *Trichophyton rubrum* (IFO 9185), and *Trichophyton mentagrophytes* (IFO 40996). The compounds **10b** and **10f** displayed notable antifungal activity against all the microorganisms employed. The activity of these compounds is almost equal to the standard. It is also interesting to note that the compounds **10b** and **10f** and **10g** showed activity towards *C. albicans* at the concentration of 3.75  $\mu\text{M}$ , which is less than the concentration of the standard Amphotericin B.

*J. Heterocyclic Chem.*, **54**, 3250 (2017).

## INTRODUCTION

1,2,3-Triazoles are one of the most important classes of heterocyclic organic compounds, which are reported to be present in a plethora of biological activities -for diverse therapeutic areas [1]. The 1,2,3-triazole motif is associated with diverse pharmacological activities such as antibacterial, antifungal, hypoglycemic, antihypertensive, and analgesic properties. Polysubstituted five-membered

aza heterocyclics rank the most potent glycosidase inhibitors [2]. Further, this nucleus in combination with or in linking with various other classes of compounds such as amino acids, steroids, aromatic compounds, and carbohydrates became prominent in having various pharmacological properties [3]. 1,2,3-Triazole modified carbohydrates have become easily available after the discovery of the Cu(I) catalyzed azide-alkynes 1,3-dipolar cycloaddition reaction [4] and quickly became a



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A. Sathwik Reddy  
Principal  
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# VAAGDEVI DEGREE & PG COLLEGE

Department of Chemistry

Student work project

2017-18

**Class:** BSc  
**Subject:** Chemistry  
**Title:** Effect of Temperature on Electrophilic substitution reactions of Benzene  
**Project supervisor:** Dr.A.Srinivas Reddy  
**Students Name:**

1. V.Sharanya Reddy
2. K.Shiva sai
3. K.Shirisha
4. K.Vinay
5. G.Santhosh



*A. Srinivas Reddy*

Principal

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## Effect of Temperature on Electrophilic substitution reactions of Benzene

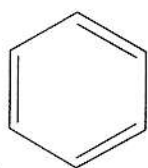
### Requirements:

1. Benzene, Sulphuric acid, Nitric acid.
2. Magnetic stirrer, water bath, General Apparatus.

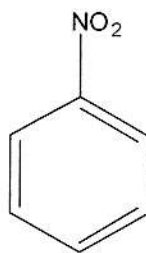
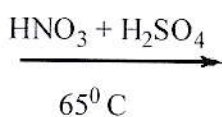
### Procedure

Benzene and mixture of Nitric acid and sulphuric acids were taken in a RB flask at  $65^{\circ}\text{C}$  and higher temperatures to study about the effect of temperature on Nitration reaction of Benzene for 90 min. At  $65^{\circ}\text{C}$  temperature benzene gives only Nitro benzene but at higher temperatures it gives m-dinitro benzene. Generally Nitro benzene is a liquid and m-Dinitro benzene is a solid.

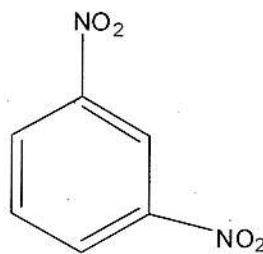
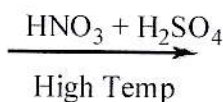
This project work clearly explained about the Effect of temperature on Electrophilic reaction of Benzene.



Benzene



Nitro benzene



m- Dinitro benzene

FIELD WORK

The department of chemistry organized a field work on "Rain water harvesting" for B.sc - chemistry students.

Name of the students :

1. S. Shravya
2. Ch. Swathi
3. Salva
4. K. Ranjith kumar
5. P. Srinivas



A. Subudhalaw  
Principal  
VAAGDEVI DEGREE & P.G. COLLEGE  
Kishanpura, Hanumakonda.



# VAAGDEVI DEGREE & PG COLLEGE

Department of Chemistry

Student work project

2018-19

**Class:** BSc  
**Subject:** Chemistry  
**Title:** Knoevenagel Condensation –A Case study  
**Project supervisor:** Dr. A.Srinivas Reddy  
**Students Name:**

1. A.Preethi
2. V.Nagaraju
3. M.Shiva kumar
4. P.Sahithi
5. D.Sowjanya



*A. Srinivas Reddy*

Principal

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## PROJECT WORK

It had been decided in the department to explore the skills of students towards Research Based criteria, we conducting projects for their <sup>enhancing</sup> scientific knowledge.

\* **TOPIC:** Chromatography Techniques.

### Objectives:

- \* In chemical analysis, chromatography is a laboratory technique for the separation of a mixture into its components.
- \* The Mixture is dissolved in a fluid solvent called the Mobile phase, which carries it through a system on which a material called the stationary phase is fixed.



A. *[Signature]*  
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# PROJECT WORK

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Our department of chemistry had introduced a project for chemistry students to enhance the skills towards Research Based criteria on the topic - Analysis of spectral data

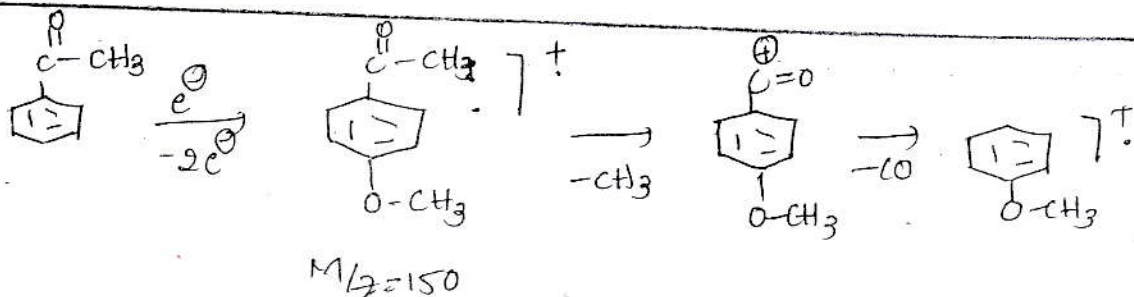
\* In this project we provided spectral data, through which students can analyze and concluded various compounds based on spectral data.



A. Anandulu

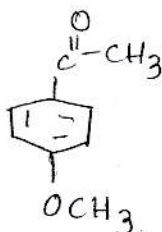
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### Report:

Based on the above conclusion (I.R, U-V,  $^{13}\text{C}$ NMR,  $^1\text{H}$  NMR & mass) the structure of the compound is identified as



p-methoxy acetophenone.