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## Photochemical Study of Medicinal Compound (N-2 (thaizolyl) sulfanilamide,)

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### ABSTRACT

N-2(thaizolyl) sulfanilamide, it is common hetero atoms are N,O and S.Sulphonamide are synthetic chemotherapeutic agents which contain a sulphonamide (SO<sub>2</sub>- NH<sub>2</sub>)group in their structures. The Photochemical reaction of N-2(thaizolyl) sulfanilamide it is in different medium, for example of, neutral medium, acidic medium and alkaline medium It is react (irradiate) with 125volt UV light for (70-80) hrs, sun light (around 20-25 days) and dark room approximate one month , for different time duration Undergoes giving two products (I&II).The reaction was carried out neutral medium. Those product identify by this process 1.purification of solvent (methanol), 2.thin layer chromatography (for TCL, silica gel-G was used as adsorbent) 3. Melting point was noted by capillary method in concentrated sulphuric acid, 4. IR spectroscopy,5 1HNMR spectroscopy, 13CNMR and Mass spectroscopy.

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### 1. Introduction

Photochemistry is the study of reaction that are brought by the action of visible or UV light. It may be absorption of light or may be emission of radiation from every electron rich species. Generally electromagnetic radiation in the UV (200-400 nm) and Visible (400-800 nm) regions are useful in bringing about photochemical reactions. The electromagnetic radiation consist in the direction of propagation of the beam of the when these radiation are absorbed by the molecules, they increase the potential energy. The most interesting type of electronic excitation in organic molecules are pi and pi to pi star transition. Theses

transition have low energy requirement and occur at longer wavelength. These transition are associate only with unsaturated centres. Though the energy of n-pi\* transition. There are even number of electrons in a typical organic molecule and these electrons are usually paired in the ground state. On promotion of an electron from any fo occupied orbital, the energy state of the molecule changes, these state may singlet or tinline character According to Wyhe<sup>1</sup>, Photochemistry is a natural meeting point of spectroscopic energy transfer and reaction kinetics. According to Chapman<sup>2</sup>, it is science arising from the

application of photochemical method to organic chemistry and organic chemical method to photochemistry. Photochemistry of a number of organic compounds has been studied so far. A thorough survey of literature shows that very little work has been done on the photochemistry of N'-(thiazolyl) sulfanilamide. Sulfathiazole is an intestinal antibacterial agent and is used in the treatment of bacillary count in the large bowel in patients undergoing surgery<sup>3</sup>.

## 2. Experimental

Photochemical reaction of N'-(2-thiazolyl) sulfanilamide in alkaline, acidic and neutral medium using benzophenone as sensitizer. Substrate (2g) was dissolved in dried and distilled methanol (200ml) in a beaker and benzophenone (0.01g) was added as sensitizer. The solution was then transferred in the photo reactor.

And irradiation was started. The temperature of the reaction mixture was kept constant by continuous water circulation. The progress of the reaction was observed at regular intervals. After about 50 hrs. new spot appear on the plate along with original spot. With the increase in the exposure time the original spot gradually disappeared. The irradiation was stopped after 51 hrs. The solution was concentrated on water bath under reduced pressure. An orange yellow crystalline solid was separated after overnight. The solution was filtered, washed, dried and recrystallized from methanol. One product was found.

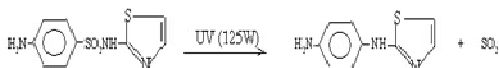
### PRODUCT -I

Yield	-	1.45 gm
Melting Point	--	156 <sup>0</sup> C (decompose)
Test of Nitrogen	_	Positive
Test of Sulphur	_	Positive

## 3. Results and Discussion

The photochemical (photolysis) of the compounds has been carried out using benzophenone as sensitizer under the UV lamp (125W), when N-(2-thiazolyl)sulfanilamide was irradiated by UV light in alkaline medium IT GIVE (2:4 diamino 5-phenylthiazole product-I) the structure of the product has been confirmed by the IR, <sup>1</sup>H NMR, <sup>13</sup>C NMR and MASS Spectroscopy.

1. IR spectrum of the product shows peaks at 3358.3 (NH stretching), 1593.7 (CN stretching), 1084.6, 828.1 cm<sup>-1</sup> (aromatic CH bending)
2. <sup>1</sup>H NMR spectrum of product shows peaks at 7.2-6.5 (aromatic protons) 3.48 (NH & NH<sub>2</sub> protons).
3. <sup>13</sup>C NMR spectrum of the product shows peaks at 152.0 (C=N carbon atom) 141 (C-S carbon), 135 (C-N carbon atom), 124-130 (aromatic carbon atoms).



### Medicinal Properties:

- ✓ It is an antibacterial chemical, it is an organic compound consisting of an aniline derivative with a sulfanilamide group.
- ✓ Powdered sulfanilamide was used by reduced infection rates and to dramatic reduction.

- ✓ Sulfanilamide remains in use today primarily for treatment of vaginal yeast infection.

## 4. References

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