# Study of UV Absorption Spectra of Plant Extracts and Identification of Compounds Present In It

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## Introduction

This project helps us study the chemical composition of plant extracts of different medicinal plants using a spectrometer which is a scientific instrument to separate and measure spectral components of physical phenomenon.

The plant extracts used in this experiment are of Neem and Tulsi, studying their factors is a great use to medicinal background. Neem is used for curing leprosy, dental plaque and many more such diseases, whereas Tulsi is of great value and helps controlling our blood circulation rate at the normal level. A large number of medical plants and their purified constituents have shown beneficial therapeutic potentials. In order to promote the use of medicinal plants as potential sources of antimicrobial compounds, it is important to thoroughly investigate their composition and activity and thus validate their use.

## Theory

UV spectroscopy also known as ultraviolet visible spectroscopy refers to absorption spectroscopy or reflectance spectroscopy in the ultraviolet visible region.This means that it uses light in the visible and adjacent ranges. The absorption or reflectance in the visible range directly affects the perceived color of the chemicals involved. In this region of electromagnetic spectrum the atoms and molecules undergo electronic transitions. Absorption spectroscopy is complementary to fluorescence spectroscopy, in that fluorescence deals with transitions from the excited state to the ground state, while absorption measures transitions from the ground state to excited state.

## Outline of Procedure

1. **Step 1:**The samples are washed with sterile distilled water. The leaves are cut, shade dried, ground into fine powder and stored in airtight polythene bags untiluse.
2. **Step 2:**2g of air dried powder of leaf sample is extracted with 50 ml of solvents such as ethanol and

acetone with gentle stirring for 72 h*. The sample is kept in dark for 72 h* with intermittent shaking. After incubation the solution is filtered through Whatmann No.1 filter paper and the filtrate is collected (crude extracts). It is then transferred to glass vials and kept at 4°C beforeuse.

3. **Step3:** The sample is diluted to 1:10 with the samesolvent.
4. **Step4:** Sample is kept in cuvette &analyzed.

## Observation Tables

**Table 1:**UV visible analysis of acetonic Neem extract

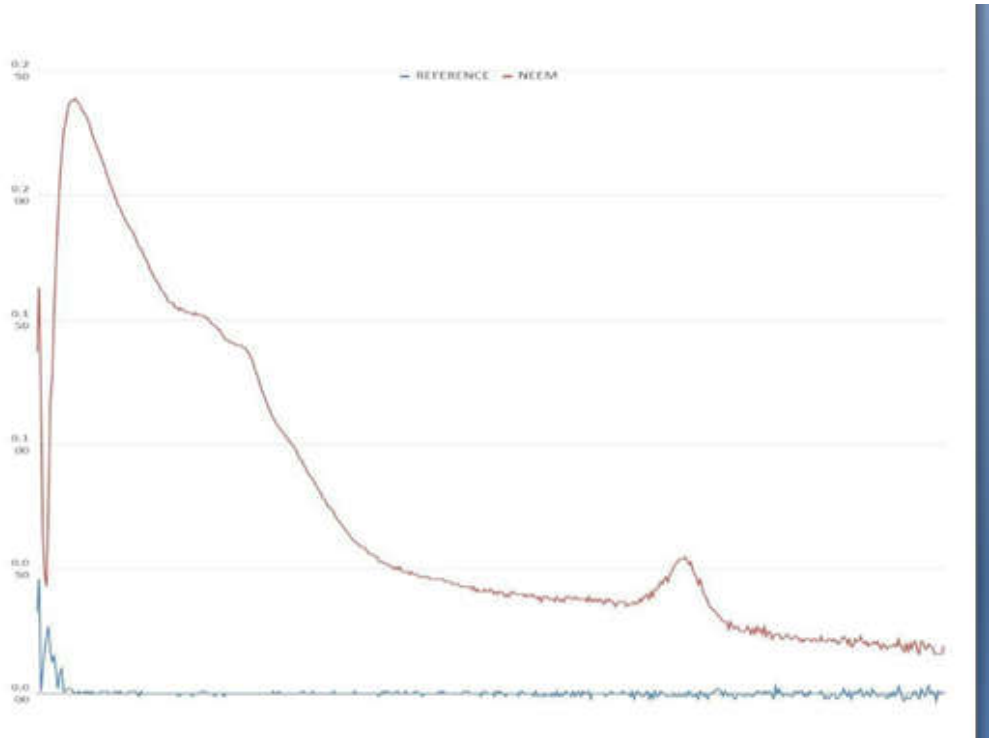
| Sr.No. | Wavelength(Nm) | Absorption Value |
|---|---|---|
| 1 | 225 | 0.015 |
| 2 | 372 | 0.183 |
| 3 | 476 | 0.073 |
| 4 | 624 | 0.037 |
| 5 | 664 | 0.054 |
| 6 | 646 | 0.039 |

**Table 2:**UV visible analysis of acetonic Tulsi extract

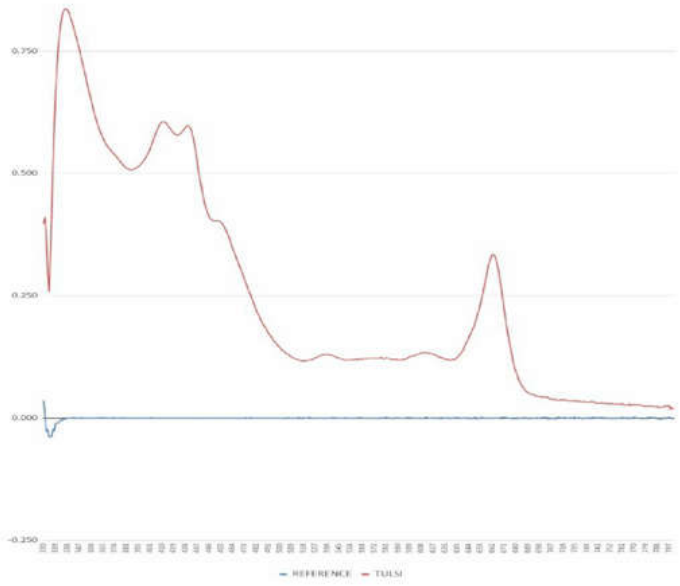
| Sr.No. | Wavelength(Nm) | Absorption Value |
|---|---|---|
| 1 | 339 | 0.83 |
| 2 | 432 | 0.592 |
| 3 | 537 | 0.13 |
| 4 | 612 | 0.134 |
| 5 | 665 | 0.324 |
| 6 | 771 | 0.044 |

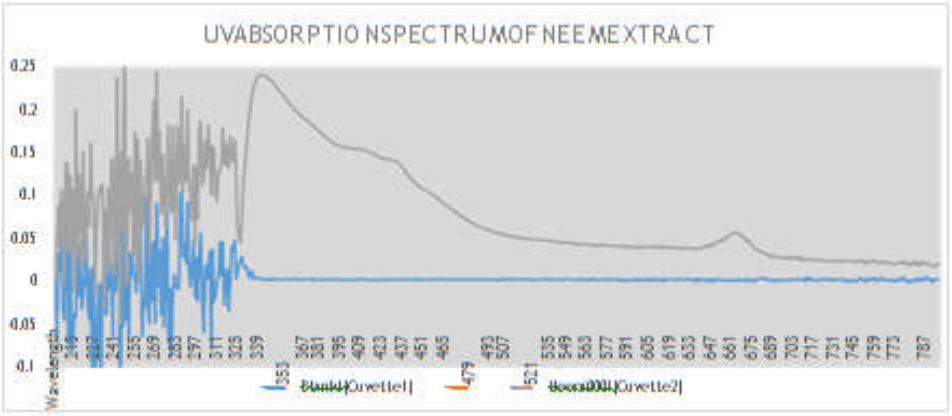
**Graph Obtained By Spectrometer**

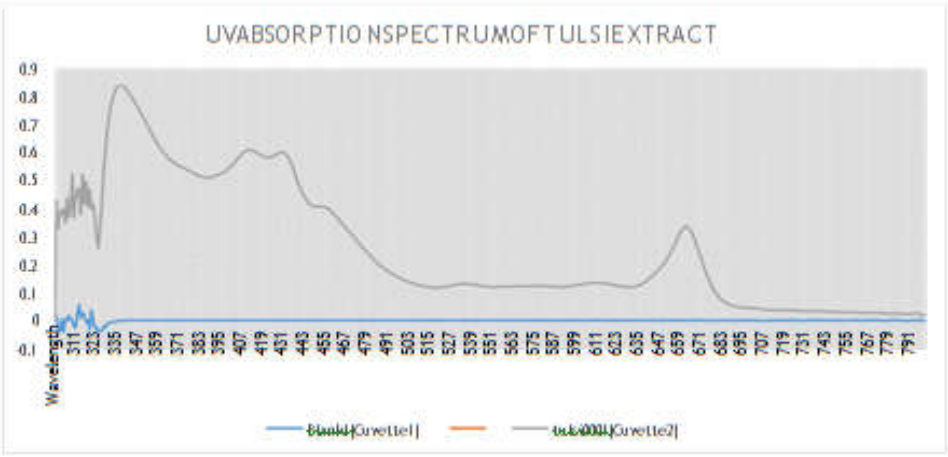
**Graph 1:**UV absorption spectrum of Neem extract




**Graph 2:**UV absorption spectrum of Tulsi extract






**Compounds Identified**

**Table 1:**Components identified in Neem Leaf extract

| Sr.No. | Compound |
|---|---|
| 1 | Salannin |
| 2 | Phytol (C20H400) |
| 3 | 4-cyclooctane-1-ol,8,8'-(iminodi-2,1-phenylene)bis (C28H35NO2) |
| 4 | 1,3-diphenyl-2-azafluorene (C24H17N) |
| 5 | Lup-20(29)-2n-3-ol,acetone,(3β) (C32H52O2) |
| 6 | Germanicol (C30H50O) |
| 7 | 6-desacetyl nimbinene |
| 8 | Nimbin,nimbinin |

**Table 2:**Componentsidentified in Tulsi Leaf extract

| Sr.No. | Compound |
|---|---|
| 1 | Cirsiliol |
| 2 | Cirsimaritin |
| 3 | Isothymusin |
| 4 | Rosameric acid |
| 5 | Methyl eugenol |
| 6 | Apigenin |
| 7 | Eugenol |
| 8 | Carvacrol |

## References

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[ 2.] Basic uv vis spectroscopy.(booklet researchgate

# Credits

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