# TPC AND TFC CONTENT OF *CHLOROXYLON SWIETENIA DC.* LEAVES

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**Abstract**

The total phenolic content (TPC) and Total flavonoids content (TFC) of the plant extract of *Chlorozylon swiertemia* in different solvents such as Ethyl acetate, Methanol and Aqueous were determined using modified Folin-Ciocalteu method and aluminium chloride method respectively. The total phenolic content (TPC) and total flavonoids content (TFC) of 100 mg. dried powder extract in Ethyl acetate, Methanol and Aqueous were found to be 4.36 and 2.76, 3.04 and 2.04, 1.38 and 1.19 respectively.

**Keywords:-** TPC and TFC, *Chloroxylon Sweitenia*, phytochemicals.

## Introduction

Medicinal plants represent a rich source of antimicrobial agents. Many of the plant materials used in traditional medicine are readily available in rural areas at relatively cheaper than modern medicine [1]. Plants generally produce many secondary metabolites which constitute an important source of microbicides, pesticides and many pharmaceutical drugs. Plant products still remain the principal source of pharmaceutical agents used in traditional medicine [2]. The effects of plant extracts on bacteria have been studied by a very large number of researchers in different parts of the world. Much work has been done on ethno medicinal plants in India. Interest in a large number of traditional natural products has increased. Plants are the sources of natural pesticides that make excellent leads for new pesticide development.

Plants with Medicinal importance are termed as Medicinal plants and these plants have been used by human as well as animals from the prehistoric era. These Medicinal plants are the chief source of traditional medicines as they synthesize thousands of chemical compounds as the resultant of their primary and secondary metabolic activity. These chemical compounds commonly known as, 'Phytochemicals' and possesses potential to defense against numerous diseases caused by viruses, bacteria, fungus and animals [3,4,5,6,7,8].

## 1. Experimental

### 1.1. Material

The fresh, healthy leaves of the subjected plant, C. *swietenia* were collected from Hoshangabad forest, Madhya Pradesh, India in July 2016 and theses collected leaves were further identified by Prof. Ravi Upadhyay HOD in Botany Govt. P.G. College Pipariya.

### 1.2. Methods

The collected leaves were properly washed for the three times by using the tap water and then after allow drying at room temperature for one week. These dried leaves were crushed with help of grinder properly to make homogenous powder. The powder was stored in dark polythene container in refrigerator for further use. The sample was used for the chemical analysis to detect the different class of secondary metabolites. For qualitative detection 65 g of this prepared powder was used for Soxhlet extraction with different chemical solvent like Petroleum Ether, Chloroform, Ethyl Acetate, Methanol and Aqueous by taking the ration of 1:2, for 72 hours at 30 to 40 °C. the obtained extract was filtered through whatmen filter paper no. 1 separately.

### 1.3 Total Phenolic content estimation (TPC)

The total phenolic content of the extract was determined by the modified Folin-Ciocalteu method. 10 mg Gallic acid was dissolved in 10 ml methanol, various aliquots of 10- 50µg/ml was prepared in methanol. 10 mg of dried extract was dissolved in 10 ml methanol and filter. Two ml (1 mg/ml) of this extract was for the estimation of phenol. 2 ml of methanolic extract and each standard was mixed with 1 ml of Folin-Ciocalteu reagent (previously diluted with distilled water 1:10 v/v) and 1 ml (7.5 g/l) of sodium carbonate. The mixture was vortexed for 15s and allowed to stand for 10min for color development. The absorbance was measured at 765 nm using a spectrophotometer.

### 1.4 Total flavonoids content estimation (TFC)

Determination of total flavonoids content was based on aluminium chloride method. 10 mg quercetin was dissolved in 10 ml methanol, and various aliquots of 5- 25 µg/ml were prepared in methanol. 10 mg of dried extract was dissolved in 10 ml methanol and filter. Two ml (1 mg/ml) of this extract was for the estimation of flavonoids. 1 ml of 2% $AlCl_3$ solution was added to 3 ml of methanolic extract or each standard and allowed to stand for 15min at room temperature; absorbance was measured at 420 nm.

## 2. Results and discussion

### 2.1 Total Phenolic content estimation (TPC)

The content of total phenolic compounds (TPC) was expressed as mg/100mg of gallic acid equivalent of dry extract sample using the equation obtained from the calibration curve: **Y = 0.011X+0.011, $R^2$= 0.998,** where X is the absorbance and Y is the gallic acid equivalent (GAE).

**Calibration curve of gallic acid**

**Table 4: Preparation of calibration curve of Gallic acid**

| S. No. | Concentration | Absorbance |
|---|---|---|
| **0** | 0 | 0 |
| **1** | 10 | 0.135 |
| **2** | 20 | 0.247 |
| **3** | 30 | 0.364 |
| **4** | 40 | 0.474 |
| **5** | 50 | 0.581 |

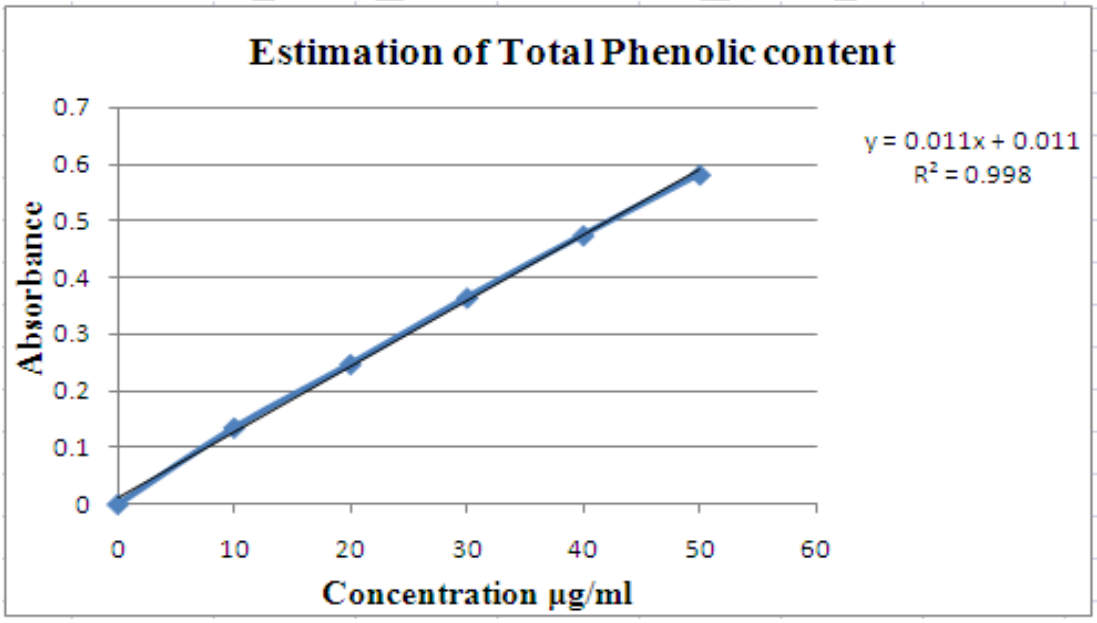


**Figure 1: Graph of Estimation of Total Phenolic content**

### 2.2 Total flavonoids content estimation (TFC)

Total flavonoids content was calculated as quercetin equivalent (mg/100mg) using the equation based on the calibration curve: **Y=0.040X + 0.009, $R^2$=0.999**, where X is the absorbance and Y is the quercetin equivalent (QE).

**Table 1: Preparation of calibration curve of quercetin**

| S. No. | Concentration | Absorbance |
|---|---|---|
| **0** | 0 | 0 |
| **1** | 5 | 0.216 |
| **2** | 10 | 0.425 |
| **3** | 15 | 0.625 |
| **4** | 20 | 0.815 |
| **5** | 25 | 1.021 |

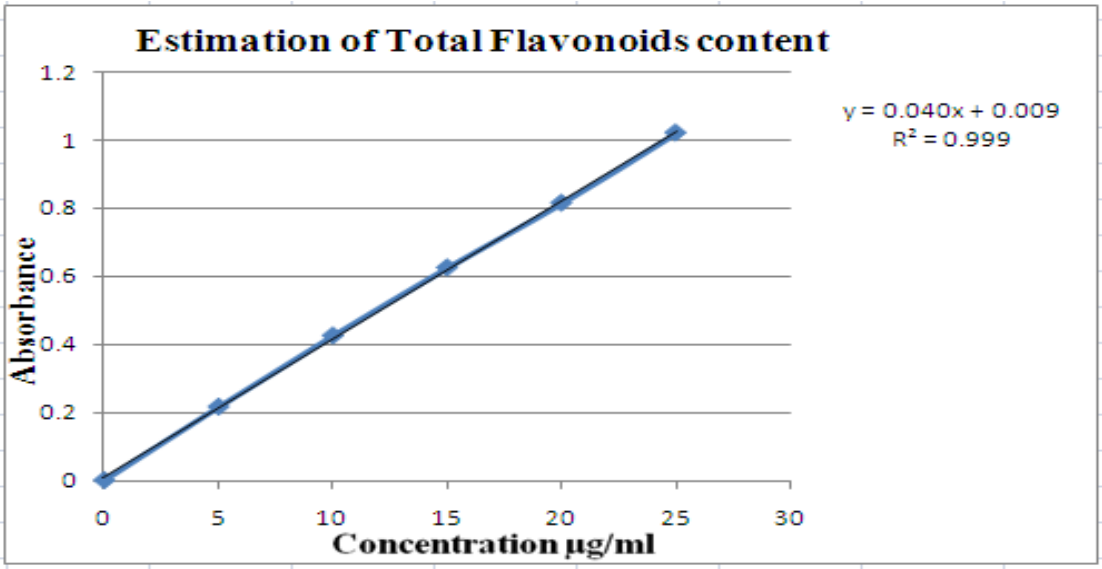


**Figure 2: Graph of estimation of total flavonoids content**

### 2.3 Results of estimation of total phenolic and flavonoids content

**Table 2: Estimation of total phenolics and total flavonoids content**

| S. No | Extracts | Total phenolic content (mg/100mg of dried powder) | Total flavonoids Equivalent to Quercetin mg/ 100 mg of dried extract |
|---|---|---|---|
| **1.** | Ethyl acetate | 4.36 | 2.76 |
| **2.** | Methanol | 3.04 | 2.04 |
| **3.** | Aqueous | 1.38 | 1.19 |

## 3. Conclusion

A single plant could be the source of thousands of different Phytochemicals and around the world hundreds of variety of Phytochemicals has been identified by various researchers. As Phytochemicals are the resultant

products of the different metabolic activity of the plant so it's very uncertain to determine that how many Phytochemicals getting synthesis during a single chemical reaction within the plant.

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