



# Qualitative And Quantitative Analysis Of Sugars In *Trichosanthes Cucumerina* By Paper Chromatography

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**Abstract :** *Trichosanthes cucumerina* is belonging to the family Cucurbitaceae. It is a summer season vegetable. It is an annual climber commonly grown in Asian. The plant is enriched with high level of nutritional values. The plant is pharmacologically and therapeutically active due to its rich source of functional constituents such as flavonoidal glycosides, carotenoids, phenolic acids, and soluble and insoluble dietary fibers and essential minerals. Snake guard is provided with health benefits such as healing of burns, lowering blood sugar level in type 2 diabetes Miletus, reduce inflammation, lowers the risk of cancer and build immunity. Antioxidant activity for TPC and TFC were significantly higher in leaves then flowers and fruits. *Trichosanthes cucumerina* can be considered as a nourishing food commodity which posses high nutritional and functional benefits for human health. Our project work is mainly concentrate on the availability of sugar molecules attached to the aglycone groups of glycosides, the confirmation of anthraquinone glycosides by qualitative methods and the presence of sugar molecules are identified as sucrose, glucose and fructose which are attached to the anthraquinone. The presence of sugars helps to increase the bioavailability and absorption of drugs used in the treatment of different diseases.

**KEYWORDS:** snake gourd, origin, botanical characteristics, nutrition, cultivation, and economic value.

## 1.INTRODUCTION

*Trichosanthes Cucumerina* is a monoecious, which is 25cm long, its flowers are unisexual, white opening, at night time and their hairs are curled at daytime when flowers are closed, and unfurl at night. Its fruits are 200 cm long deep red at maturity, hanging below the vine. It mainly contains disaccharides like sucrose, glucose, fructose. It has been reported that western and central African sub region have several underutilized crops that are very useful to the local people. The world health organization has reported a high presence of malnutrition level among the rural dwellers in Africa. Jiledeh reported high deficiency in protein for over 100 million people in Africa. Some indigenous but neglected edible plants in nutrition of the rural populations in Africa. The seed has been reported to have high quality of vegetable oil which could be used as food and other industrial purpose.

## NEED OF THE STUDY.

We have to determine the types and amount of sugars present in *Trichosanthes cucumerina* using paper chromatography and should use for the quantification of amount of each sugar present in plant material.

## 2.Data and Sources of Data

We have obtained this data from books of Pharmacognosy which shows information about the plant *Trichosanthes cucumerina*, this also obtained have collected the source like plant from the near Vizianagaram.

## 3.RESEARCH METHODOLOGY

The methodology section outline the plan and method that how the study is conducted. This includes Universe of the study, sample of the study, Data and Sources of Data, study's variables and analytical framework. The details are as follows;

### 3.1 Extraction procedure:

Fresh leaves of *Trichosanthes cucumerina* are collected and they are used for the extraction process. The whole process can be carried forward for the identification of sugars. These extraction processes is the initial process for the identification process, there are the steps that should be implemented to complete the entire process.

Firstly, we should use *Trichosanthes cucumerina* leaves for the extraction process. It can be completed by taking the leaves placing them in a petroleum ether which of 100ml, the necessity of taking petroleum ether is to remove the chlorophyll from the leaves, at least 40% amount of petroleum ether separates chlorophyll from the leaves. The leaves should place for 24hrs in the petroleum ether, then only the chlorophyll get separate from the leaves. Now we use filter paper for separation of leaves from the petroleum ether, so after filtering the sample, we get filtrate and residue. Now filtrate should be placed in 100ml of ethanol and then kept it in an incubator at 37°C for 48hrs. After incubation the solvent should be filtered by using Whatman filter paper. We should evaporate the solvent by heating, and stored in a glass container.

There is another process for extraction of snake gourd leaves for identification of sugars, firstly we take fresh leaves of *Trichosanthes cucumerina* and placed in the sunlight until they get dried, now blend the whole leaves finely. Now take 5-10g of leaf powder in a petroleum ether of 100ml leave it for 45min, then filter the solution and dry the filtrate. under sunlight. Now add the filtrate in 100ml of ethanol kept it in room temperature for 24hrs. Now filter the solvent and evaporate the solvent by heating and stored in a glass. In mobile phase we have used n-butanol : Acetic acid : water (4:5:1). First, we have to prepare mobile phase so we follow process,

### 3.2 Preparation of mobile phase:

Take 40ml of n-butanol, 50ml of Acetic acid, and 10ml of water to solution. Now saturate the above solution for 20 minutes. Take precoated silica gel and draw a line which of 2cm above the bottom of the plate. By using micro pippete pour a drop of each sample on TLC plate. Now take the TLC plate and dip into the mobile phase. And observe for 1hr, and we should mark the spots which are travelled above the plate. Now we should calculate  $R_f$  value by following,

$$R_f = \frac{\text{distance travelled by solute}}{\text{distance travelled by the solvent front}} \\ = 5.9 / 15 \\ = 0.393$$

### 3.3 Qualitative analysis for identification of sugars in *Trichosanthes cucumerina*:

#### Identification of sugars:

##### Fehling's test:

Take 2ml of sample, then add 5ml of equal volumes of Fehling's reagent A and B. Boil until brick red ppt is observed.

##### Benedict's test:

Take 2ml of sample, then add 5ml of benedict's reagent. Now boil for 5 minutes it turns blue to green color.

##### Inversion test:

Take 5ml test solution and add 5 drops of conc. HCl then boil it for 3 min cool under the tap water then add Fehling's and benedict's reagent brick red ppt is observed.

##### Flavonoids test:

Take 1ml of extract, add 1ml of ethanol, 1ml of sodium acetate, 1ml of aluminum chloride and add 1ml of dil. HCl. Finally, greenish yellow is obtained.

##### Amino acids:

##### Ninhydrin test:

Take 3ml of test sample and add 0.5ml of ninhydrin reagent. Boil it for 1min. Blue color is obtained.

##### Glycosides:

##### Killer- Kilani test:

Add 1ml glacial acetic acid to test sample cool it. And add 2 drops of  $FeCl_3$  then add conc.  $H_2SO_4$  along the walls of the test tube, —reddish color ring at junction of 2 layers.

### 3.4 Ascending paper chromatography procedure:

Firstly, we have to prepare samples of glucose and fructose.

**Glucose:** weigh 1gm of glucose sample and add 10 ml of distilled water, dissolve and saturate for 20 minutes. From the above solution take 1ml and add 10ml of distilled water.

**Fructose:** weigh 1gm of fructose sample and add 10ml of distilled water, dissolve and saturate for 20 minutes. From the above solution take 1ml and add 10 ml of distilled water.

**Sucrose:** weigh 1gm of sucrose sample and add 10ml of distilled water, dissolve and saturate for 20 minutes.

From the above solution take 1ml and add 10 ml of distilled water.

### 3.5 Preparation of mobile phase:

Take 60ml of n-butanol, 40ml of pyridine, 30ml of water. Now saturate the above solution for 20minutes. Take Whatman filter paper and draw a line which of 3cm above the bottom of the paper. By using micropipette pour 2drops of extraction sample, glucose and fructose samples on the filter paper. Now dip the filter paper into mobile phase observe it for 1hr. We should calculate the  $R_f$  value;

$$R_f = \frac{\text{distance travelled by solute (glucose)}}{\text{distance travelled by the solvent front}}$$

$$= 2.3 / 5.6$$

$$= 0.41$$

$$R_f = \frac{\text{distance travelled by solute (fructose)}}{\text{distance travelled by the solvent front}}$$

$$= 3.4 / 5.7$$

$$= 0.59$$

$$R_f = \frac{\text{distance travelled by solute (sucrose)}}{\text{distance travelled by the solvent front}}$$

$$= 1.8 / 5.6$$

$$= 0.32$$

### 3.6 Preparation of dilutions:

Take 10gm of leaf powder dissolved in 0.03M of NaOH leave it for 30 minutes. Now filter the solution. From the above solution take 1ml and make up with 9ml of water (stock solution). From that stock solution take 1ml make up with 9ml of water (0.1%). From 0.1% solution take 1ml and make up with 9ml of water. (0.01%). From 0.01% solution take 1ml and make up with 9ml of water. (0.001%). From 0.001% solution take 1ml and make up with 9ml of water. (0.0001%). From 0.0001% solution take 1ml and make up with 10ml of water. (0.00001%). These dilutions are poured in cuvettes and observed under 540nm wavelength

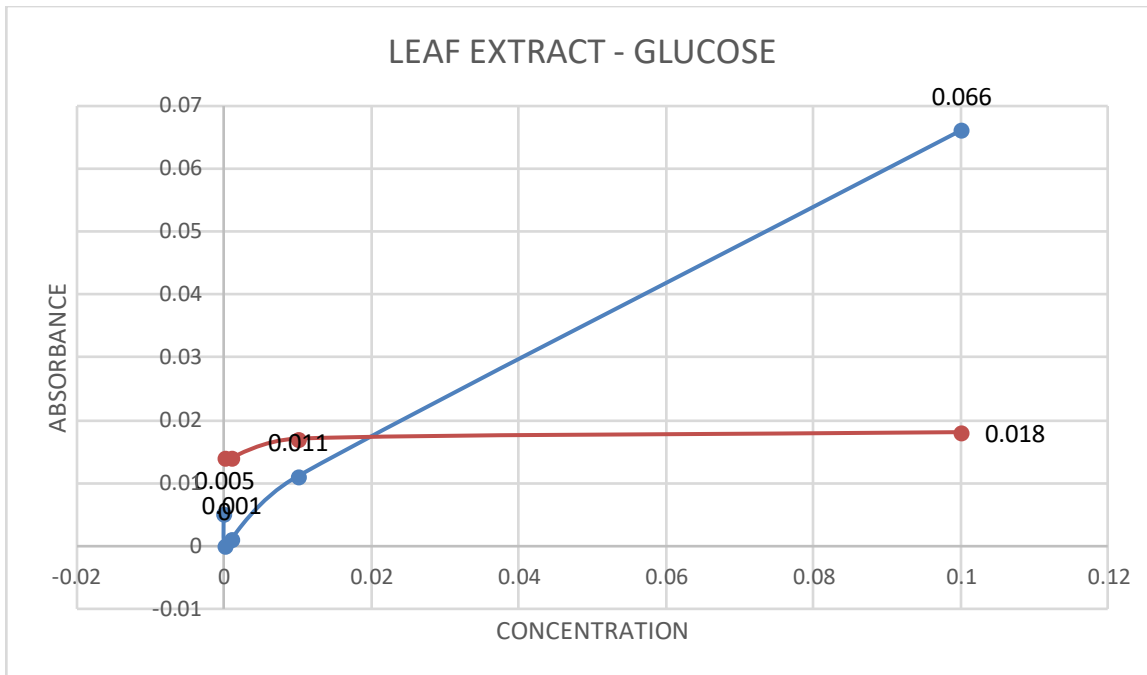
### 3.7 Preparation of dilutions in Glucose:

Take 1gram of glucose is added with 10ml of water and mixed until dissolved in it. From this solution is known as stock solution. From this stock solution is taken by 1ml and make up with 9ml of distilled water (0.1%). From 0.1% solution take 1ml and make up with 9ml of water. (0.01%). From 0.01% solution take 1ml and make up with 9ml of water. (0.001%). From 0.001% solution take 1ml and make up with 9ml of water. (0.0001%). From 0.0001% solution take 1ml and make up with 10ml of water. (0.00001%). From these dilutions are poured in cuvettes and observed under 540nm wavelength

## IV. RESULTS AND DISCUSSION

- LEAF EXTRACT – GLUCOSE:

| S.NO | WAVE LENGTH | LEAF EXTRACT ABSORBANCE | GLUCOSE ABSORBANCE | CONCENTRATION |
|------|-------------|-------------------------|--------------------|---------------|
| 1    | 540nm       | 0.066                   | 0.018              | 0.1%          |
| 2    | 540nm       | 0.011                   | 0.017              | 0.01%         |
| 3    | 540nm       | 0.001                   | 0.014              | 0.001%        |
| 4    | 540nm       | 0.000                   | 0.014              | 0.0001%       |
| 5    | 540nm       | 0.005                   | 0.016              | 0.00001%      |



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