



PRELIMINARY PHYTOCHEMICAL SCREENING OF LEAF EXTRACT OF CUCUMIS SATIVUS OF MOTIHARI DISTRICT

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Abstract

The present study was carried out in 2024 to investigate the phytochemical constituents present in the leaf extract of *Cucumis sativus* collected from Motihari District, Bihar. *Cucumis sativus* is a commonly cultivated vegetable crop and its leaves are traditionally used for various medicinal purposes. The fresh leaves were collected, dried and extracted with ethanol. The crude extract was subjected to qualitative tests for the detection of alkaloids, flavonoids, glycosides, saponins and tannins following standard procedures. The screening results revealed the presence of flavonoids, glycosides, saponins and tannins in the leaf extract. Alkaloids were not detected in the tested sample. The presence of these bioactive compounds indicates that *Cucumis sativus* leaves possess potential medicinal properties and can be further explored for pharmacological activities.

Keywords: *Cucumis sativus*, Leaf extract, Phytochemical screening, Motihari.

Introduction

Medicinal plants have played a significant role in healthcare systems across the world. The use of plants for therapeutic purposes is an age-old practice and is still prevalent in many parts of India. *Cucumis sativus* L. commonly known as cucumber belongs to the family Cucurbitaceae. While the fruit is widely consumed, the leaves of this plant are also valued in traditional medicine for their cooling, anti-inflammatory and antimicrobial properties. The therapeutic action of any plant is mainly due to the presence of secondary metabolites. Important classes of phytochemicals



include alkaloids, flavonoids, glycosides, saponins and tannins which are known to exhibit antioxidant, antimicrobial and anti-inflammatory effects.

Motihari District of Bihar has a rich tradition of using local plants for medicinal purposes. Despite this, scientific data on the phytochemical composition of *Cucumis sativus* leaves from this region is limited. Therefore, a preliminary phytochemical screening was conducted in 2024 to identify the major chemical constituents present in the leaf extract of *Cucumis sativus* from Motihari District. This study aims to provide scientific validation for the traditional uses of the plant and to serve as a basis for further research.

Material And Methods

Fresh leaves of *Cucumis sativus* were collected from different fields of Motihari District during 2024. The plant material was authenticated and then washed thoroughly with tap water followed by distilled water to remove dust particles. The cleaned leaves were shade dried at room temperature for about two weeks. After complete drying, the leaves were powdered using an electric grinder and stored in airtight containers.

For the preparation of extract, fifty grams of leaf powder was soaked in two hundred fifty milliliters of ethanol for seventy two hours with occasional shaking. After the extraction period the mixture was filtered through Whatman filter paper and the filtrate was concentrated under reduced pressure to obtain the crude ethanol extract.

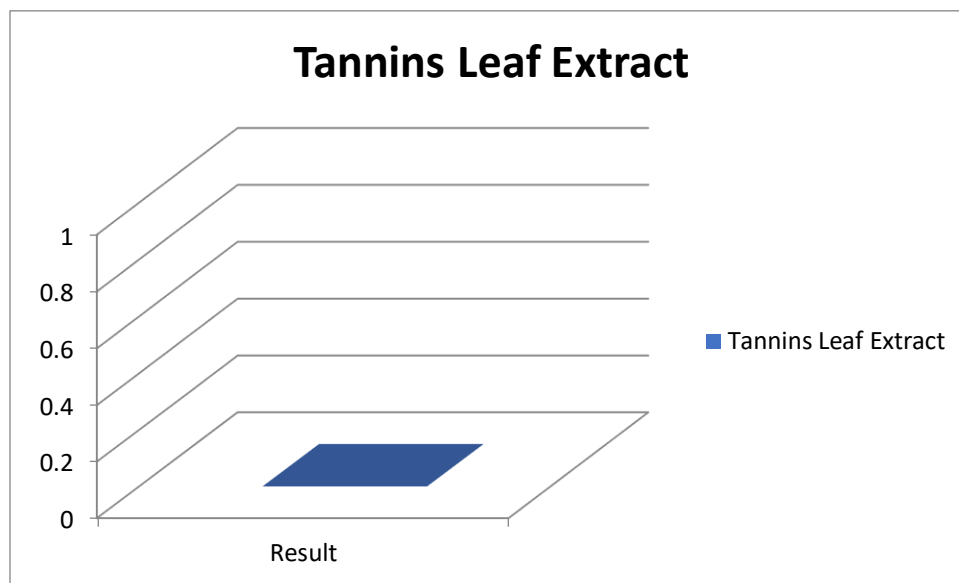
The qualitative phytochemical screening of the extract was performed using standard methods. Tests for alkaloids were carried out using Mayer's and Wagner's reagents. Flavonoids were detected by Shinoda test and alkaline reagent test. Glycosides were identified by Keller-Killiani test. Saponins were confirmed by foam test and tannins were tested using ferric chloride solution. The presence of phytochemicals was recorded based on color development and formation of precipitate.

Result And Discussion

The results of preliminary phytochemical screening of ethanol leaf extract of *Cucumis sativus* collected from Motihari District in 2024 are presented below. The analysis showed that the leaf extract was positive for flavonoids, glycosides, saponins and tannins. However, alkaloids were absent in the extract.

Table 1: Preliminary Phytochemical Screening of Ethanol Leaf Extract of Cucumis sativus from Motihari District.

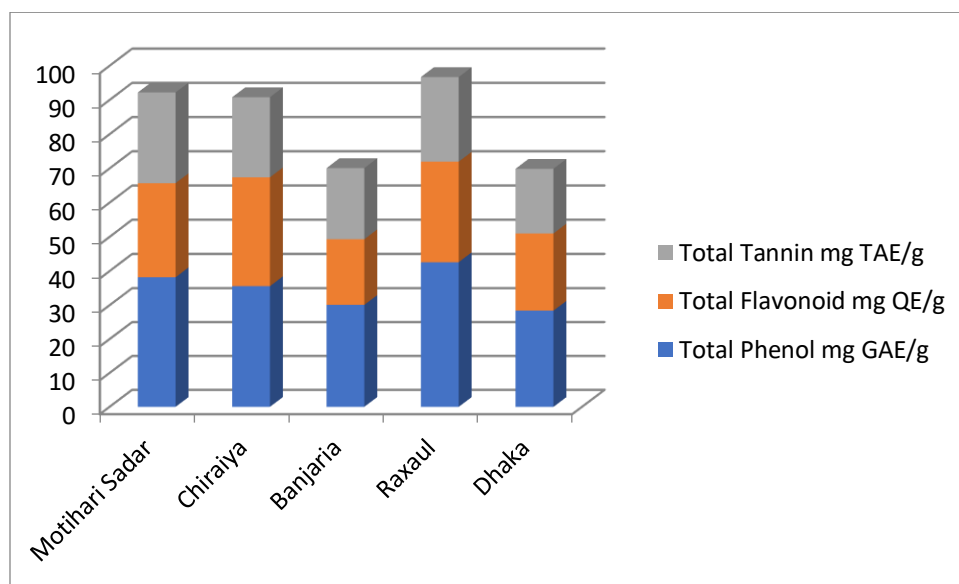
S.No	Phytochemical	Motihari District 2024	Result
1	Alkaloids	Leaf Extract	Absent
2	Flavonoids	Leaf Extract	Present
3	Glycosides	Leaf Extract	Present
4	Saponins	Leaf Extract	Present
5	Tannins	Leaf Extract	Present

**Figure 1: Qualitative Detection of Tannins in Leaf Extract of Cucumis sativus.**

The presence of flavonoids suggests that the plant may possess antioxidant and anti-inflammatory properties. Flavonoids are known to neutralize free radicals and protect cells from oxidative stress. Glycosides detected in the extract are reported to have antimicrobial and cardiac activities. Saponins are responsible for foaming and are known for their detergent and anti-inflammatory properties. Tannins present in the extract contribute to astringent and wound healing activities.

Table 2: Quantitative Analysis of Total Phenol, Flavonoid and Tannin Content in Cucumis sativus Leaf Extract from Different Locations of Motihari District,

S.No	Location	Total Phenol mg GAE/g	Total Flavonoid mg QE/g	Total Tannin mg TAE/g
1	Motihari Sadar	38.2	27.5	26.5
2	Chiraiya	35.6	31.8	23.4
3	Banjaria	30.1	19.2	20.8
4	Raxaul	42.6	29.4	24.7
5	Dhaka	28.4	22.6	18.9

**Fig 2: Quantitative Analysis of Cucumis sativus Leaf Extract**

The quantitative analysis of ethanol leaf extract of *Cucumis sativus* from 5 different locations of Motihari District revealed significant variation in phytochemical content. The highest total phenol content was recorded in Raxaul (42.6 mg GAE/g) followed by Motihari Sadar (38.2 mg GAE/g), while the lowest was observed in Dhaka (28.4 mg GAE/g). For total flavonoid content, Chiraiya showed the maximum value (31.8 mg QE/g) and Banjaria showed the minimum (19.2 mg QE/g). Similarly, total tannin content was highest in Motihari Sadar (26.5 mg TAE/g) and lowest in Dhaka (18.9 mg TAE/g). Overall, Raxaul and Motihari Sadar samples exhibited



comparatively higher bioactive compound content, which may be attributed to soil and climatic variations within the district.

The absence of alkaloids in this sample may be due to the nature of solvent used or seasonal variation. The findings of the present study are in agreement with earlier reports on *Cucumis sativus* which have documented the presence of similar phytochemicals. The results indicate that *Cucumis sativus* leaves from Motihari District are rich in bioactive compounds and support their traditional use in local medicine.

Conclusion

The preliminary phytochemical screening of leaf extract of *Cucumis sativus* from Motihari District conducted in 2024 revealed the presence of flavonoids, glycosides, saponins and tannins. Alkaloids were not detected in the tested extract. The presence of these phytochemicals suggests that the leaves of *Cucumis sativus* have potential medicinal value. Further studies are recommended for isolation of active compounds and evaluation of their pharmacological properties to establish the therapeutic potential of the plant.

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