



Journal of Functional Materials and Biomolecules

Journal homepage: www.shcpub.edu.in



ISSN: 2456-9429

IN VITRO PRELIMINARY PHYTOCHEMICAL ACTIVITY OF VARIOUS EXTRACT OF CUCUMIS SATIVUS PEEL

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Received on 21 November 2023, accepted on 30 November 2023,
Published online on December 2023

Abstract

Bioactive compounds are non-nutritive, essential metabolites used to cure diseases and play a vital role in the preparation of natural drugs. Characterization of plant compounds in unexplored and less explored plant paves way for drug preparation and natural medicines. The main objectives of the present study the in vitro preliminary phytochemical activity of aqueous and methanol extract of *Cucumis sativus* peel. The results showed that the phytochemical screening of aqueous extract of *Cucumis sativus* peel revealed the presence of phytoconstituents namely alkaloid, carbohydrate, flavonoid, steroid, terpenoid, tannin, quinone, phenols and absence the bioactive compounds namely saponin and glycosides when compared to methanol extract showed the presence of bioactive compounds namely carbohydrate, flavonoid, tannin, quinone, phenols and the absence of alkaloid, saponin and glycosides were respectively. Cucumber is used as a vegetable food, with their various therapeutic applications against specific ailments as explained in the traditional ayurvedic medicines. This plant is rich in their nutritional properties and medicinal application against many disorders including cancer, Alzheimer's, and diabetes. Still, there are many more secrets need to be discovered about its phytoconstituents and their pharmacological effect through further researches, such as isolation of bioactive and their preclinical and clinical studies.

Keywords: Bioactive compounds, phytochemical activity and pharmacological effect.

1. Introduction

Nearly 80% of the world's population relies on traditional medicines for primary health care, most of which involve the use of plant extracts. In India almost 95% of the prescriptions were used in Unani, Ayurveda, Homeopathy and Siddha [1]. Phytochemicals are responsible for medicinal activity of plants [2] these are non-nutritive chemicals that have protected human from various diseases. The major constituent consists of alkaloids, flavonoids, saponins, phenolic compounds, phytosterols, proteins and amino acids, gums and mucilage and lignin [3]. Phytochemical constituents are the basic

source for the establishments of several pharmaceutical industries the constituents are playing a significant role in the identification of crude drugs. The medicinal value of these plants lies in some chemical substances that produce a definite physiological action on the human body. The most important property of these bioactive constituents of plants is that they are more effective with little or no side effects when compared to the commonly used synthetic synthetic chemotherapeutic agents.

The cucumber is a *Cucurbitaceae* family, along with squash and different kinds of melon. Cucumbers are high in water and low in calories, fat, cholesterol, and sodium. They have a mild, refreshing taste and high water content. They can be refreshing and pleasant to eat in hot weather and help prevent dehydration. It is eaten savory, but it is strictly a fruit. *Cucumis sativus* have been grown in Nigeria and India for food and medicinal purposes since ancient times, and they have long been part of the Mediterranean diet. *Cucumis sativus* consist mainly of water [4]. *Cucumis sativus* are believed to have anti-inflammatory benefits. Used directly on the skin, sliced cucumber has a cooling and soothing effect that decreases swelling, irritation, and inflammation. It can alleviate sunburn. Placed on the eyes, they can help decrease morning puffiness. The present study was carried out to establish the preliminary phytochemical analysis and antioxidant activity of aqueous and methanolic extract of *Cucumis sativus* Peel. The Fig.1. shows the Cucumber (*Cucumis sativus* L.) peel and classified botanical as follows: [5]

Kingdom: Plantae

Subkingdom: Tracheobiota

Super division: Embryophyta

Division: Tracheophyta

Class: Magnoliopsida

Order: Cucurbitales

Family: Cucurbitaceae

Genus: *Cucumis* L.

Species: *Cucumis sativus* L. **Fig.1. Cucumis sativus peel**



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2. Experimental design:

2.1. Collection of Vegetable:

The fresh vegetable of *Cucumis sativus* were purchased from a local market in Tirupattur and washed thoroughly with distilled water to devoid of any impurities. The *Cucumis sativus* was peeled off carefully with a skin peeler. The peeled skin is shade dried for dehydration for about a week. The completely dried skin is made in to a fine powder using electric mixing grinder. The ground powder is sieved stored in an air tight container and used whenever it was needed.

2.2. Preparation of Peel Extracts:

Take 10gm of *Cucumis sativus* Peel + 100 ml of methanol and 10gm of *Cucumis sativus* Peel + 100 ml of aqueous then kept in boiling water bath at room temperature for 10 minutes and allowed to cool to room temperature. Then the contents will be filtered through whatman No:1 filter paper. The filtrate can be used for further studies by storing in refrigerator at 4°C not more than a week.

2.3. Phytochemical Analysis:

The aqueous and methanol extracts of *Cucumis sativus* Peel solution were assessed for the existence of the phytochemical analysis by using the following standard methods [6].

2.3.1. Test for Anthraquinone:

10 ml of benzene was added in 6g of the Ephedra powder sample in a conical flask and soaked for 10 minutes and then filtered. Further 10ml of 10% ammonia solution was added to the filtrate and shaken vigorously for 30 seconds and pink, violet, or red color indicated the presence of anthraquinone in the ammonia phase.

2.3.2. Test for Tannin:

10 ml of bromine water was added to the 0.5 g extract decoloration of bromine water showed the presence of tannin.

2.3.3. Test for Saponin:

5.0 ml of distilled water was mixed with aqueous and methanol extract in a test tube and it was mixed vigorously. The frothing was mixed with few drops of olive oil and mixed vigorously and the foam appearance showed the presence of saponin [7].

2.3.4. Tests for Flavonoid:

Take 2 ml of 2% NaOH mixture was mixed with aqueous and methanol extract; concentrated yellow color was produced, which became colorless when we added 2 drops of diluted acid to mixture. This result showed the presence of flavonoid.

2.3.5. Tests for Glycoside:

Added 2 ml H₂SO₄ concentrated to the aqueous and methanol extract. A reddish brown color formed which indicated the presence of steroidal aglycone part of the glycoside.

2.3.6. Test for Terpenoid:

Taken 2 ml of chloroform was added with the 5 ml aqueous and methanol extract evaporated on the water path and then boiled with 3 ml of H₂SO₄ concentrated. A grey color formed which showed the entity of terpenoid.

2.3.7. Test for Steroid:

Taken 2 ml of chloroform and concentrated H₂SO₄ were added with the 5 ml aqueous and methanol extract. In the lower chloroform layer red color appeared that indicated the presence of steroid [8].

2.3.8. Test for Alkaloid:

The solvent free extract (50mg) was stirred with one ml of dilute hydrochloric acid and filtered. The filtrate was tested for alkaloids. To the filtrate, a drop of Mayer's reagent was added along the sides of the test tube. A white precipitate indicates the test as positive.

2.3.9. Test for Carbohydrate:

To 0.5ml of the extract of the plant sample, 1ml of water and 5-8 drops of Fehling's solution was added at hot and observed for brick red precipitate [9].

2.3.10. Test for Quinone:

About five ml of the extract was boiled with 10% HCl for few minutes in a water bath. It was filtered and allowed to cool. Equal volume of Chloroform was added to the filtrate. Few drops of 10% ammonia was added to the mixture and heated. Formation of pink colour indicates the presence of anthraquinone [10].

3. Results and Discussion:

3.1. Phytochemical Analysis of aqueous and methanol extract of *Cucumis sativus* peel

The results showed that the phytochemical screening of aqueous extract of *Cucumis sativus* peel revealed the presence of phytoconstituents namely alkaloid, carbohydrate, flavonoid, steroid, terpenoid, tannin, quinone, phenols and absence the bioactive compounds namely saponin and glycosides when compared to methanol extract showed the presence of bioactive compounds namely carbohydrate, flavonoid, tannin, quinone, phenols and the absence of alkaloid, saponin and glycosides were respectively. The Table 1 shows the Phytochemical Analysis of aqueous and methanol extract of *Cucumis sativus* peel as follows,

Table 1: The Preliminary Phytochemical Analysis

Phytochemical Constituents	<i>Cucumis sativus</i> peel	
	Aqueous	Methanol
Carbohydrate	+	+
Alkaloid	+	-
Flavonoid	+	+
Steroid	+	-
Terpenoid	+	-
Tannin	+	+
Quinone	+	+
Phenol	+	+
Saponin	-	-
Glycoside	-	-

Indicated as: + means Presence, - means Absence

4. Conclusion:

It can be concluded that the cucumber is used as a vegetable food, with their various therapeutic applications against specific ailments as explained in the traditional ayurvedic medicines. This plant is rich in their nutritional properties and medicinal application against many disorders including cancer, Alzheimer's, and diabetes. Still, there are many more secrets need to be discovered about its phytoconstituents and their pharmacological effect through further researches, such as isolation of bioactive and their preclinical and clinical studies.

Acknowledgement:

This work was supported by Sacred Heart College, Tirupattur - 635601, Tirupattur District, Tamilnadu, India, through Sacred Heart Fellowship [Ref: SHC/SH Fellowship/2023/18]. We would like to show our gratitude to the Principal and Management of Sacred Heart College, Tirupattur - 635601, Tirupattur District Tamilnadu, India for supporting their research.

Conflict of Interest: Nil**References**

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