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PHYTOCHEMICAL ESTIMATION AND ANTIOXIDANT ACTIVITY OF VARIOUS EXTRACT OF *Stigma maydis* (CORN SILK)

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Abstract:
The stigmas, or delicate, yellowish threads, from the female flowers of the maize plant are collected to form corn silk. Traditional uses for corn silk include diuretic, antilithiasic, uricosuric and treatment for prostatitis, gout, kidney stones, cystitis, and nephritis. The study examined the phytochemical components, total antioxidant activity, and free radical scavenging ability of many maize silk extracts. Various solvents, including benzene, chloroform, ethanol, ethyl acetate, methanol, and petroleum ether, were used to extract phytochemicals from corn silk. Positive screening results for flavonoids, alkaloids, phenols, steroids, glycosides, carbohydrates, terpenoids, and tannins were obtained from the phytochemical screening process. Methanol was the optimal extract rant for phytochemicals. Because DPPH is a stable antioxidant, its ability to scavenge free radicals was assessed using the DPPH test. Methanol proved to be the most effective solvent for extracting phytochemicals. The assessment of free radical scavenging activity was conducted by employing the DPPH test, which utilizes DPPH as a reliable and stable antioxidant. The methanolic extract exhibited the highest level of DPPH scavenging activity and overall antioxidant activity. The inclusion of flavonoids, alkaloids, phenols, steroids, glycosides, and tannins in maize silk may contribute to these activities.

Keywords: *Phytochemicals, corn silk, solvents, antioxidant activity, free radical scavenging activity.*

Introduction

For centuries, plants have been used as medicines for human ailments because they contain therapeutic properties. Maize, commonly known as corn, Indian corn, or corn L.L., is the third largest cultivated food crop in the world and also one of the main sources of energy for people living in semiarid climates [1]. corn, it's a cereal, an important food grain. Apart from the grains, the leaves, silks, stalks and inflorescences of the corn plant are used in the treatment of various ailments. Corn silks, scientifically known as maydis stigma or zea mays, are the yellowish, thread-like tassels or stigmas that appear inside the husk of the corn. They range in length from 4-8 inches

and have a mild sweet taste. Corn silk is used as a diuretic and antilithiasic treatment. It is also used as an antiseptic for edema treatment, as well as in the treatment of cystitis and gout and kidney stones, as well as prostatitis.

Phytochemicals (also known as plant chemicals) are bioactive non-nutrient plant compounds found in fruit, vegetables, grains and other plant foods. They have been associated with a reduction in major chronic diseases (12). It is estimated that 5000 different phytochemicals are present in fruits, vegetables and grains. These are also referred to as secondary metabolites. The distribution of phytochemicals within the plant parts and their presence within plant species vary [2].

Free radicals are linked to a range of physiological and pathological processes, such as inflammation, aging, mutagenicity, and carcinogenicity.

The term "free radicals" refers to chemical entities that possess one or more unpaired electrons, with an unpaired electron being one that is not coupled with another electron in an orbital. Free radicals, namely the oxygen radical known as superoxide, can result in the formation of further radicals [17].Oxidative stress, characterized by an excessive production of reactive oxygen species (ROS) that overwhelms the body's antioxidant defence mechanisms, has been implicated in the pathophysiology of cardiovascular diseases. It can lead to significant damage to biological macromolecules and disruption of normal metabolic processes [19].Antioxidants are substances that scavenge free radicals, protecting living organisms from harm caused by unregulated production of reactive oxygen species and resulting in lipid peroxidation, protein degradation, and DNA strand breakage. Therefore, there is a need to restrict and characterize natural antioxidants that have few or no adverse effects, for use in food or medicine as a substitute for synthetic antioxidants [15]. The study focuses on the initial phytochemical analysis of various extracts (benzene, chloroform, ethanol, ethyl acetate, methanol, and petroleum ether) of corn silk. The aim is to identify the main group of phytochemicals that contribute to the plant's medicinal properties. The antioxidant properties of several extracts of maize silk were investigated using the DPPH test to assess their free radical scavenging activity.

MATERIAL AND METHODS

Plant material

Locally sourced fresh sweet corn was procured from the Madhya Pradesh market. The corn silk was extracted, dried in the shade, and stored at room temperature for subsequent examination. A fresh sample of maize silk was utilized to examine the presence of phytochemicals. To do this, a quantity of five grams of corn silk was measured, crushed, and mixed thoroughly with 50ml of alcohol, acid (1% HCl), and water individually. The ingredients were subjected to boiling for a duration of one hour, thereafter cooled, filtered, and employed for the examination of phytochemicals. The extract underwent analysis to determine the presence of phytochemicals, including flavonoids, phenols, anthocyanins, steroids, tannins, alkaloids, saponins, and terpenoids, using a standardized process [10].

Soxhlet Extraction of The Plant Sample

The dehydrated maize silk, devoid of moisture and pigmentation, was crushed into a coarse powder. The pulverized specimen was inserted into a small metal container called a thimble, which was then positioned inside the Soxhlet device. The extraction procedure utilized a range of organic solvents, specifically petroleum ether, ethyl acetate, and methanol. The extraction process lasted for a period of 8-10 hours, during which the heating mantle was adjusted to maintain a temperature range of 40-60oC. After the extraction process, the sample extract was filtered and then concentrated until it became completely dry. The samples were collected in a hermetically sealed container. The extraction yield of all extracts was quantified using the following equation.

Pharmacognostical and phytochemical evaluation:

Molisch's test involves adding 2-3 drops of a 1% alcoholic napthol solution and 2 ml of concentrated sulphuric acid to the sample, along the walls of a test tube. The presence of

carbohydrates is indicated by the appearance of a purple to violet ring at the confluence of two liquids.
The Fehling test involves adding Fehling reagent to the sample. If a brick red precipitate forms, it indicates the presence of carbohydrates. Test to detect the presence of proteins and free amino acids.
A small amount of the material was dissolved in a few millilitres of water and then treated with the following reagents. The user's text is "[3]". The presence of protein and free amino acid is indicated by the appearance of a red hue when using Million's reagent. The presence of proteins and free amino acids is shown by the appearance of a purple color when using the ninhydrin reagent. Biuret's test was conducted by adding equal volumes of a 5% sodium hydroxide solution and a 1% copper sulphate solution. The manifestation of a pink or purple hue indicates the existence of proteins and amino acids. Conduct a test to detect the presence of tannins and phenolic compounds. A minute portion of the sample was isolated and mixed with water to test for the existence of phenol compounds and tannins using the specified reagents. 1) Prepare a diluted solution of Ferric chloride with a concentration of 5%. The resulting solution will have a blue or green tint. 2) A solution of lead acetate with a concentration of 10% resulted in the formation of white precipitates.

Test for alkaloids
A fraction of the sample was agitated with few drops of dilute hydrochloric acid and was tested with various reagents for the presence of alkaloids.The reagents are [5]
- Dragendroff's reagent produces Reddish brown precipitates
- Wagner's reagent produces Reddish brown precipitates
- Mayer's reagent produces Cream color precipitates
- Hager's reagent produces Yellow color precipitates

Test for glycosides
- **Legal's test**

To the sample add 1 ml of pyridine and few drops of sodium nitropruside solutions and then it was made alkaline with sodium hydroxide solution. Appearance of pinkto red colour shows the presence of glycosides.

- **Borntrager's test**

The sample was subjected to chloroform treatment, followed by the separation of the chloroform layer. An equivalent amount of diluted ammonia solution was added. The ammonia layer exhibits a pink hue, indicating the presence of glycosides.

- **Baljet's test**

To the sample add picric acid, orange color shows presence of glycosides.

Test for flavonoids
Alkaline reagent test
When a few drops of magnesium hydroxide solution are added to the test solution, a vibrant yellow color is produced. This color then becomes colorless at the addition of a few drops of dilute acid, indicating the presence of flavonoids.[7] The test conducted by Shinoda. A small amount of the sample was dissolved in alcohol. Then, a piece of magnesium was added, followed by concentrated hydrochloric acid drop by drop. The mixture was then heated. The presence of flavonoids is indicated by the appearance of colors ranging from pink and blood red to green and blue.

Tests for fixed oils and fats
Spot test a small amount of the sample was individually compressed between two filter sheets. The presence of fixed oil can be determined by the appearance of an oil stain on the paper.

The saponification test. A tiny amount of sample was mixed with a few drops of 0.5 N alcoholic potassium hydroxide and a drop of phenolphthalein. The combination was then heated on a water bath for 1-2 hours. The presence of fixed oils and fats can be determined by the formation of soap or partial neutralization of the alkali. The input is not clear or complete.

Tests for steroids and triterpenoids

- **Libermann-burchard test**

Apply a small amount of acetic anhydride to the sample, then heat it and allow it to cool. Next, introduce concentrated sulfuric acid into the test tube from the side. This will result in the production of a brown ring at the interface of the two layers. The upper layer will turn green, indicating the presence of steroids. Additionally, the formation of a deep red color indicates the presence of triterpenoids.

- **Salkowski test**

Apply a small amount of concentrated sulphuric acid to the sample. The presence of steroids is indicated by a red color in the bottom layer, while the appearance of a yellow colored lower layer indicates the presence of triterpenoids.

Test for mucilage and gums

A minute amount of the material was individually introduced into 25 ml of 100% alcohol while continuously swirling and later filtered. The precipitates were dried using oil and analyzed for their ability to expand, confirming the presence of gum and mucilage. Add the ruthenium red solution to the sample. The presence of mucilage is indicated by the pink color.

Test for waxes

- To the test solution add alcoholic alkali solution, waxes get saponified.[7-10]

Physicochemical evaluation

The dried components (tubers and leaves) underwent a standardized method to determine certain physicochemical properties.

- **Determination of foreign organic matter (FOM)**

100 grams of the drug sample of tubers and leaves of *Sauromatum guttatum* both were carefully taken and spread out in a thin layer. Foreign matter must be detected by inspecting with unaided eye or with the help of lens (6 x). After separation and weighed, the present percentages of both parts were calculated.

- **Determination of moisture content (LOD)**

Drug sample (without preliminary drying) of approximately 10 grams of tubers and leaves of *S. guttatum* were placed after having carefully weighed in a tared evaporating dish and kept for storage in an oven at 1050 C for 5 hours and weighed. The percentages of loss on drying of both were calculated with reference to the air-dried drug.[9]

- **Determination of ash value**

Determination of the ash values of both parts (tubers and leaves) of *Sauromatum guttatum* are intended to detect low quality products, exhausted drugs and earthy or sandy matter. It can also be used as a means to detect chemical constituents using water soluble ash and acid insoluble ash.

- **Total ash**

The air-dried powder of tubers and leaves from the *Sauromatum guttatum* plant was weighed separately, with an exact amount of 3 grams. The powder was then placed in a silica crucible and

incinerated at a temperature below 450 degrees Celsius until all carbon was removed. After cooling, the crucible was weighed again to find the percentage of total ash in comparison to the dry powder.

- **Acid insoluble ash**

The ash collected from both samples of *Sauromatum guttatum* using the previously described method was subjected to a 5-minute boiling process with 25 cc of diluted hydrochloric acid. The residues were gathered on filter paper that does not contain any ash and rinsed with warm water, then burned and measured in terms of weight. The acid insoluble ash percentages of both the tubers and leaves were determined in relation to the air-dried medication.

- **Water soluble ash**

The ash collected from both samples the whole ash of *Sauromatum guttatum* was subjected to boiling for 5 minutes using 25 cc of water. The insoluble substances were collected on a filter paper that doesn't have any ash, rinsed with hot water, and then heated at a low temperature until a uniform weight was achieved. The water-soluble ash percentages of both the tubers and leaves were estimated in relation to the medication that had been dried in the air. The value of 10 is enclosed in square brackets.

- **Determination of swelling index**

The swelling index is assessed to identify the presence of mucilage in the tubers and leaves. Precisely 1 gram of tubers and leaves from the *Sauromatum guttatum* plant were weighed and placed separately in a 150 ml measuring cylinder. Subsequently, 50 ml of distilled water was added and the mixture was set aside for 24 hours, with intermittent shaking. The tubers and leaves were measured for their volume after being soaked for 24 hours.

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- **Determination of extractive value**

This method comprises of the quantity of active components extracted with solvents from a certain quantity of medicinal plant material. It is used for materials for which a suitable chemical or biological test does not yet exist.

- **Fluorescence analysis of powdered drug**

The powdered drug of both parts was analyzed to determine the fluorescence characteristics with and without chemical treatment. Observations were noticed regarding its colour in daylight and under the ultraviolet (short and long) [10, 11]

Quantitative Tests

Spectrophotometric Quantification of Total Phenolic Content: -

The Folin-Ciocalteu Assay was used to quantify the total phenolic content of the plant juice. The 0.2 mL of juice has been mixed with 2.5 mL of Folin-Ciocalteu Reagent and 2 mL of sodium carbonate solution at a concentration of 7.5%. The mixture was diluted with distilled water until it attained a final volume of 7 mL. Subsequently, the solutions prepared were left undisturbed at ambient temperature for a duration of 2 hours, after which the absorbance was quantitatively measured by spectrophotometry at a wavelength of 760 nm. Calibration curves were created using standard solutions of Gallic Acid Equivalent (GAE) in milligrams per gram (mg/g). A series of Gallic acid solutions with concentrations of 20, 40, 60, 80, and 100 µg/mL were produced. The Folin-Ciocalteu reagent has a high sensitivity to reducing chemicals, such as polyphenols. Upon reaction, they generate a hue that is blue in color. The measurement of this blue color was done using spectrophotometry.The user's text is "[13]".

Spectrophotometric Quantification of Total Flavonoid Content: -

The flavonoid concentration was measured using the Aluminium chloride method, in which 0.5 ml of Juice was combined with 2 ml of distilled water. Next, precisely 0.15 ml of sodium nitrite

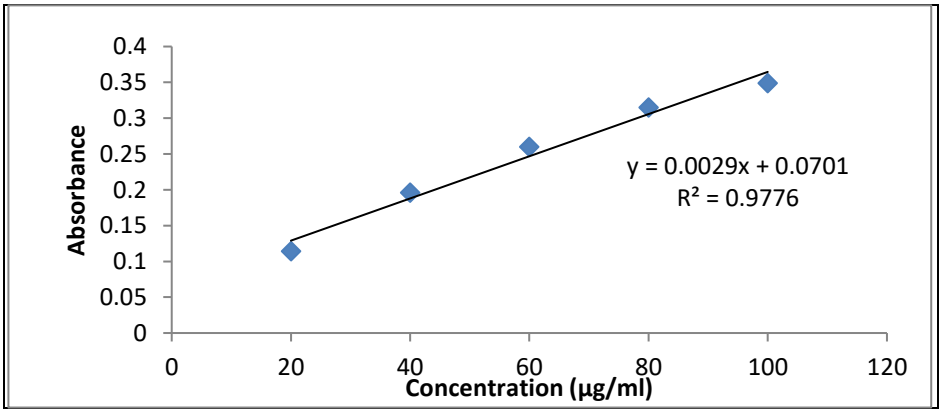
solution with a concentration of 5% was added and thoroughly mixed. Subsequently, it is recommended to wait for a duration of 6 minutes before introducing 0.15 ml of Aluminium chloride (10%) into the mixture. The resulting solution ought to be left undisturbed for another 6 minutes. Subsequently, a 2 ml aliquot of a 4% sodium hydroxide solution was introduced. The concoction was vigorously shaken and fully mixed. The absorbance of the combination was determined at a wavelength of 510 nm using a UV spectrophotometer. Calibration curves were created by utilizing standard solutions of Rutin Equivalent (GAE) in milligrams per gram. Preparations were made with concentrations of Rutin at 20, 40, 60, 80, and 100 µg/mL. The total flavonoid concentration was obtained using the calibration curve and expressed as milligrams of Rutin equivalent per gram of dry juice weight. The user's text is "[14]".

Quantitative Phytochemical analysis

Total Phenolic Content (TPC) Estimation:

Table1 Standard table for Gallic acid

Concentration (µg/ml)	Absorbance
20	0.114
40	0.196
60	0.26
80	0.315
100	0.349



Graph 1 Graph represent standard curve of Gallic acid

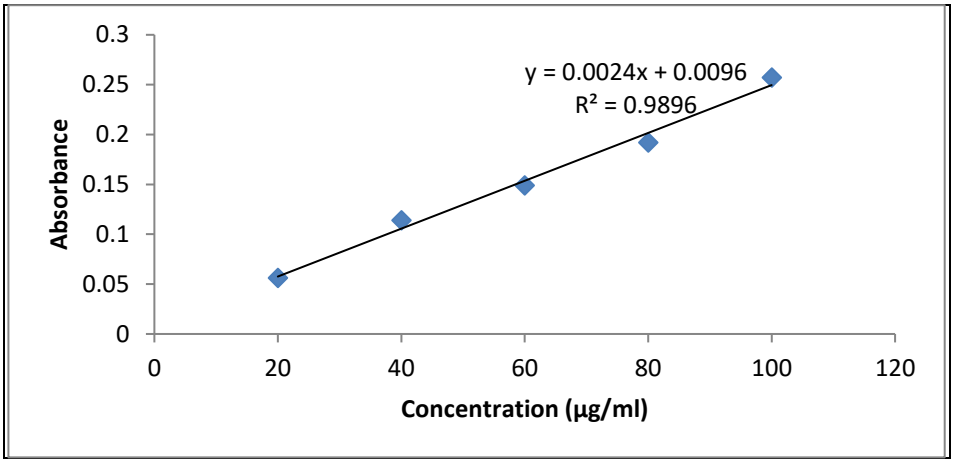
Table 2 Total Phenolic Content in extract of *Stigma maydis*

	Total phenolic content (mg/gm equivalent to Gallic acid)	
Extract	**Ethyl acetate**	**Methanol**
Absorbance Mean±SD	0.117±0.012	0.194±0.012
TPC	23.5	62

Total Flavonoid Content (TFC) Estimation:

Table 3 Standard table for Rutin

S. No.	Concentration (µg/ml)	Absorbance
1.	20	0.056
2.	40	0.114
3.	60	0.149
4.	80	0.192
5.	100	0.257



Graph 2 Graph represent standard curve of Rutin

Table 4 Total Flavonoid Content in *Stigma maydis* extract

	Total flavonoid content (mg/gm equivalent to rutin)	
Extract	**Ethyl acetate**	**Methanol**
Absorbance Mean±SD	0.048	0.104
TFC	19.5	47.5

Activity (In-vitro Anti-oxidant Activity)
DPPH Radical Scavenging Activity
Preparation of DPPH reagent
0.1mM solution of 2,2-Diphenyl-1-picrylhydrazyl (DPPH) in methanol was prepared.

Preparation of Sample/Standard
A methanol solution of extracts/standard, with a concentration of 1 mg/ml, was freshly produced. A range of volumes (20 – 100µl) of extracts/standard were withdrawn from the stock solution and placed in separate test tubes. Methanol was then added to each test tube to bring the total amount up to 1 ml. Subsequently, 2 ml of a 0.1mM DPPH the reagent was added to the solution and thoroughly mixed. The absorbance was subsequently measured at 517 nm after holding the mixture in darkness at room temperature for 30 minutes.

Preparation of control
For use as a control, extract 3 milliliters of a 0.1 millimolar DPPH solution and let it to incubate for 30 minutes at room temperature in a dark environment. The absorbance of the control was measured relative to methanol (used as a blank) at a wavelength of 517 nm. The percentage of antioxidant activity for the sample/standard was computed using a formula based procedure.

% Inhibition = [(Ab of control- Ab of sample/ Ab of control x 100]

Results and discussion:
Pharmacognostical evaluation

Table 5 Pharmacognostical evaluation of plant sample

Parameters	**Value in percentage (%)**
	Stigma maydis
Amount of Ash	5.86
Water soluble ash	3.74
Acid insoluble ash	1.23
Water extractive value	4.57
Alcoholic extractive value	2.10

Plant Collection

Table6 Plant collection

S. No.	Plant name	Plant part used	Weight
1.	*Stigma maydis*	Leaf	200gm

Percentage yield

Table 7 Percentage yield of *Stigma maydis*

S. No.	Solvent	Color of extract	Theoretical weight (gm)	Yield in gms	% Yield
1.	Pet. Ether	Yellow	300	No yield	-
2.	Ethyl acetate	Brown	287.35	0.134	0.046
3.	Methanol	Brown	261.79	1.96	0.748

Solubility determination

Table 8 Solubility Determination of *Stigma maydis* Extract

S. No.	Solvent	Ethyl acetate	Methanol
1.	Water	Insoluble	Soluble
2.	Ethanol	Insoluble	Soluble
3.	Chloroform	Soluble	Slightly soluble
4.	DMSO	Soluble	Soluble
5.	Petroleum Ether	Slightly soluble	Insoluble

Qualitative Phytochemical Analysis of *Stigma maydis* extracts

Table 9 Phytochemical analysis of *Stigma maydis* extracts

S. No.	Constituents	*Stigma maydis* extracts	
		Ethyl acetate	Methanol
1.	Amino acids	-	+
2.	Anthraquinones	+	+
3.	Alkaloids	-	+
4.	Carbohydrates	+	+
5.	Flavonoids	+	+
6.	Glycosides	+	+
7.	Saponins	-	-
8.	Steroids	+	+
9.	Tannins	+	+
10.	Terpenoids	+	+
11.	Phenols	+	+
12.	Fixed oils and fats	-	+

The examination of the ethyl acetate and methanol extracts of corn silk confirmed the presence of flavonoids, alkaloids, phenols, steroids, glycosides, carbohydrates, amino acids, terpenoids, and tannins, based on positive test results derived from phytochemical investigation. The methanolic extract of maize silk showed the highest concentration of phytochemicals in a comparison with the other extracts. The presence of phytochemical components in the methanolic extract was further investigated in the ethanolic extract.

The analgesic and anti-inflammatory properties of Zea mays husk are attributed to the presence of tannins and polyphenolic compounds [3]. Among all cereals, maize is the only one that has a significant amount of carotenoids, tocopherols, and oil content compared to other major food crops such as rice and wheat [7]. Analysis of Zea mays pollen indicated the existence of flavonol glycosides, including quercetin, isohamnetin, and kaempferol. The study emphasized the significance of diglycosides of quercetin and isohamnetin as crucial forms of flavonols. [5].

Anti-oxidant activity

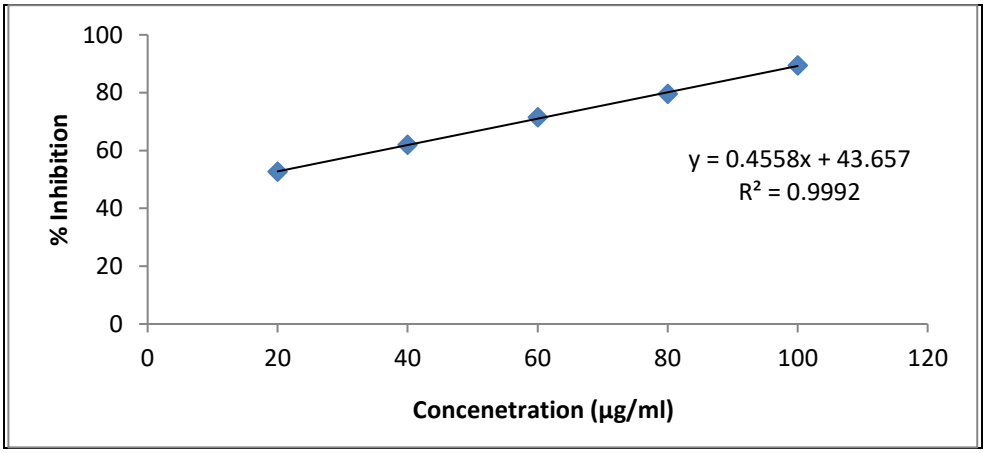
The free radical scavenging capacity of the several extracts was evaluated by employing the stable 1, 1-diphenyl-2-picryl hydrazyl radical (DPPH). Different amounts (varying from 10 to 100µg) of each corn silk extract were mixed with an equal quantity of methanolic DPPH solution (0.5mM) and incubated at a temperature of 37°C for 30 minutes. The positive control in this experiment was a DPPH solution dissolved in methanol, while the negative control was methanol only. Upon a reaction between an antioxidant and DPPH, the DPPH is reduced, causing an evident shift in color from a dark violet hue to a light yellow shade. The measurement was conducted at a wavelength of 517 nm [15].The antioxidant activity proportion was measured using the following formula.

$$\% \text{ scavenging activity} = \frac{\text{Absorbance of the sample}}{\text{Absorbance of the control}} \times 100$$

DPPH Assay

Table 1 DPPH radical scavenging activity of Ascorbic acid

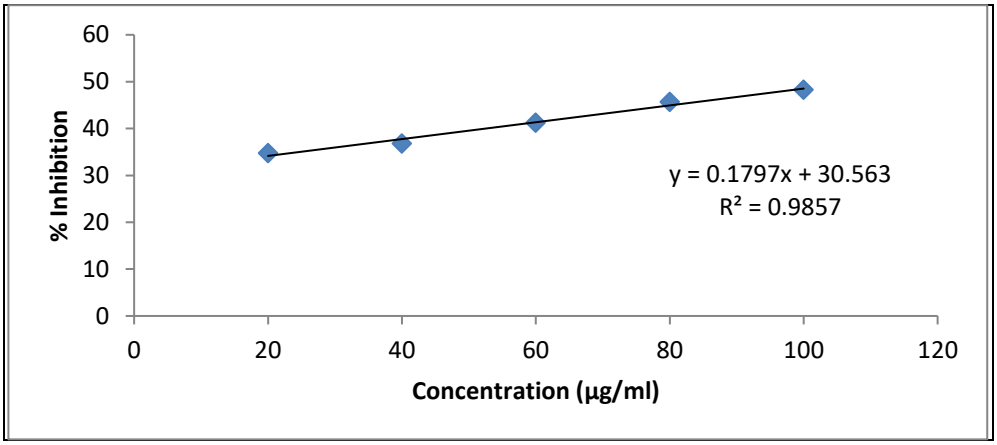
Concentration (µg/ml)	Absorbance	% Inhibition
20	0439	52.642
40	0.353	61.920
60	0.264	71.521
80	0.190	79.503
100	0.098	89.428
Control	0.927	
IC50		**13.95**



Graph 3 Graph represents the Percentage Inhibition Vs Concentration of Ascorbic acid

Table 2 1-diphenyl-2-picryl hydrazyl radical (DPPH) radical scavenging activity of Ethyl acetate extract of *Stigma maydis*

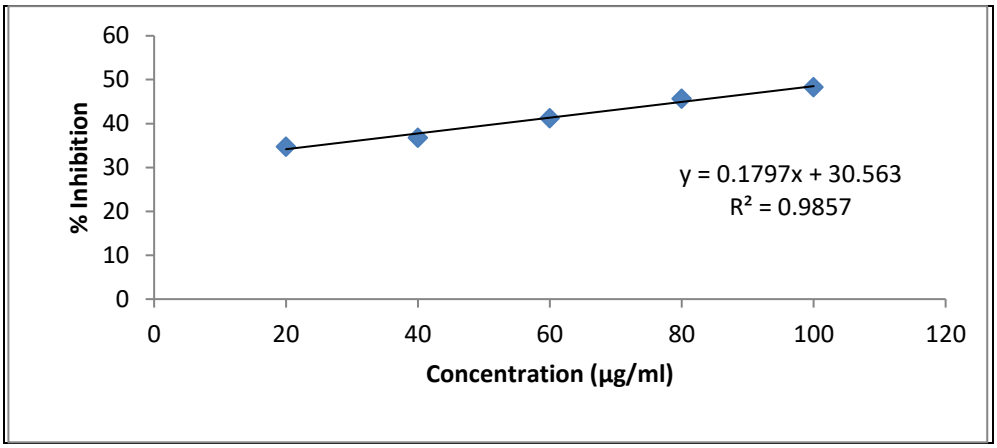
Concentration (µg/ml)	Absorbance	% Inhibition
20	0.603	34.740
40	0.584	36.796
60	0.543	41.233
80	0.502	45.671
100	0.478	48.268
Control	0.944	
IC50		**108.603**



Graph 4 Graph represents the Percentage Inhibition Vs Concentration of Ethyl acetate extract of *Stigma maydis*

Table 3 DPPH radical scavenging activity of methanol extract of *Stigma maydis*

Concentration (µg/ml)	Absorbance	% Inhibition
20	0.562	39.177
40	0.507	45.129
60	0.448	51.515
80	0.381	58.766
100	0.315	65.909
Control	0.924	
IC50		**53.82**



Graph 5 Graph represents the Percentage Inhibition Vs Concentration of Ethyl acetate extract of *Stigma maydis*

Result and Discussion:

Plants possess an exceptional capacity for antioxidants and are considered to be safer than manufactured antioxidants. The secondary metabolites derived from medicinal plants serve as antioxidants with low molecular weight. However, their specific mechanism of action varies and is influenced by both their structure and the surrounding environment [14].

]. The total weight of the *Stigma maydis* was 300 gm. After performing extraction of *Stigma maydis*, the percentage yield of extracts in different solvents like ethyl acetate and methanol were found to be 0.046 and 0.748% respectively. Qualitative analysis is crucial for identifying the phytochemical elements found in therapeutic plants. The therapeutic properties of plants are attributed to the existence of certain bioactive compounds. The extract collected from the plant material was tested using phytochemical screening, which identified the presence of a number of active phytoconstituents. Findings were presented in Table 9. A detailed physicochemical study was performed on both tubers and leaves. The assessment of the physiochemical characteristics was

conducted out using material that had been dried in the air. This study focused on analyzing the ash values, which included total ash, acid insoluble ash, and water soluble ash. Additionally, the moisture content, swelling index, and presence of foreign organic components were also determined. The concentrations of soluble compounds in alcohol and water were quantified and documented. The alcohol and water extractive values were determined in compliance with the guidelines provided by the World Health Organization (WHO).

Antioxidants play a crucial role in protecting our body from diseases by reducing the oxidative damage to cellular components caused by Reactive Oxygen Species. Recent investigations suggest that plant-derived antioxidants, which can eliminate free radicals, may have important therapeutic benefits in diseases caused by free radicals, such as diabetes, cancer, neurodegenerative diseases, cardiovascular diseases, aging, gastrointestinal diseases, arthritis, and the aging process. The antioxidant properties of plant extracts was evaluated using different in vitro approaches, such as the DPPH assay, reducing power assay, and hydroxyl radical scavenging activity assay. This study aimed to assess the antioxidant properties of *Stigma maydis* extracts in a laboratory setting. The ethyl acetate extract of *Stigma maydis* shown a DPPH radical scavenging activity with a percent inhibition of 48.268% and an IC50 value of 108.603 µg/ml. The methanol extract of *Stigma maydis* shown a DPPH radical scavenging activity with a percent inhibition of 65.909% (table 12). The IC50 value for this extract was determined to be 0.924 µg/ml. Ascorbic acid was employed as a benchmark molecule, demonstrating a percent inhibition of 89.428% and an IC50 value of 13.95 µg/ml. The DPPH method is a convenient, fast, and sensitive technique for assessing the antioxidant activity of a particular plant extract [8].Figure 1 displays the proportion of free radicals scavenging activity in different extractions of maize silk, using concentrations ranging from 10-100µg. This study involved the assessment of the percentage suppression of free radicals using various extracts of corn silk. Out of the extracts mentioned above, the methanolic extract of corn silk with a concentration of 10µg exhibits a larger percentage (65.9%) of free radicals scavenging activity compared to the other extracts. The Ascorbic acid extract of the maize silk exhibited a relatively low proportion (44.2%) of free radical scavenging activity. The methanol extraction of maize silk shown a higher percentage of scavenging activity compared to the crude ethanol, petroleum ether, acetic ether, N-butanol, and water extractions, as described in comparative investigations [12]. The antioxidant capacity enhances proportionally with the rise in concentration. The methanolic extract exhibited a free radical scavenging activity of 2.5% at a concentration of 10µg/ml, which significantly increased to 95.6% at a concentration of 100µg/ml. The overall antioxidant capacity found in several organic extracts of corn silk. The corn silk's methanolic extract demonstrated the highest antioxidant activity (85.2 mg/ml) compared to other extracts, however the ethyl acetate extract showed the lowest activity (45.5 mg/ml). The overall antioxidant activity can be ascribed to the existence of phenolic and flavonoid components in all the fractions [11]. Research conducted on maize silk revealed that the higher portions of corn silk, which are dark brown and exposed to air, exhibited the highest levels of total antioxidant activity and DPPH scavenging activity compared to the lower portions, which are light yellow and not exposed to air [9]. The methanolic extract exhibited more activity in terms of total antioxidant content. Additionally, it has been noted that the choice of solvents for extraction might significantly impact the chemical composition. [4] The findings suggest that maize silk contains a high concentration of phytochemicals, which could be accountable for its therapeutic characteristics. The antioxidant properties of maize silk may be attributed to the presence of flavonoids and tannins. The methanolic extract exhibited the highest levels of activity for both DPPH and total antioxidant activity among the other extracts. Ongoing research is being conducted in our laboratory to isolate the active components.

CONCLUSION

The study suggests that corn silk is a highly abundant source of phytochemicals and possesses antioxidant properties. Methanol proven to be the most effective solvent for extracting phytochemicals, and the extract obtained using methanol demonstrated the highest levels of DPPH

and total antioxidant activity. The results of our study indicate that corn silk leaf and extracts contain phytochemicals that are of significant pharmacological value. Furthermore, studies have demonstrated that both the extracts from the leaves and flowers exhibit strong capabilities in scavenging free radicals and acting as antioxidants. We anticipate that these features can be further investigated in the management of disorders associated with oxidative stress. Nevertheless, the toxicity status of these extracts requires more investigation in order to determine their safety for consumption.

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