ISSN: 0976-7126
Ansari & Sahoo, 13(2):35-40, 2022

International Journal of Pharmacy & Life Sciences
Open Access to Researcher

Potential activity of aqueous extract of *Corn Silk* onCarrageenan induced anti-inflammatory and antioxidant activity Using Albino Rats

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Article info

Received: 03/01/2022

Revised: 14/02/2022

Accepted: 25/02/2022

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Abstract

In the present study an attempt has been made to find out Potential activity of aqueous extract of Corn Silk on Carrageenan induced anti-inflammatory and antioxidant activity Using Albino Rats. Corn silk has a great medicinal importance due the presence of a variety of bioactive phytochemical compounds. The principal phytochemicals present in corn silk include polyphenols, phenolic acids, flavonoids, anthocyanins, glycosides, carotenoids, and some water-soluble vitamins. Active ingredients contributing to anti-inflammatory property are tannins, phenols, alkaloids, flavonoids, carotenoids, β-sitosterol, vanillin, hydroxymellein, moringine, moringinine, β-sitostenone, and 9-octadecenoic acid. The aquaous extract of corn silk at doses 100 and 200 mg/kg produced a significant effect against carrageenan induced inflammatory effect and the results were comparable to that of control. Anti- inflammatory activity of aquaous extract of corn silk showed significant and similar to that of indomethacine (10 mg/kg).

It was observed that the aquaous extract of corn silk (400 mg/kg, p.o.) exhibits maximum anti-inflammatory activity against Carrageenan induced hind paw edema. Nitric oxide scavenging activity was measured by using UV-Visible spectrophotometer. Sodium nitroprusside (5mM) in phosphate buffer was mixed with different concentrations of EEET (25-800 µg/ml), dissolved in normal saline and incubated at 25°C for 30 min. Control without test compound but with equivalent amount of sodium nitroprusside was taken. Aquaous extract of corn silk known to scavenge the free radicals generated by ABTS by donating a hydrogen atom indicating aquaous extract of corn silk a potent anti-oxidant. Decolorization of ABTS is observed which expressed IC_{50}value of 60µg/ml.

Keywords: Potential activity, aqueous extract, Corn Silk, Carrageenan, anti-inflammatory, antioxidant activity, Albino Rats

Introduction

Inflammation is the immune system's response to harmful stimuli, such as pathogens, damaged cells, toxic compounds, or irradiation, and acts by removing injurious stimuli and initiating the healing process. Inflammation is therefore a defense mechanism that is vital tohealth. Usually, during acute inflammatory responses, cellular and molecular events and interactions efficiently minimize impending injury or infection. This mitigation process contributes to restoration of tissue homeostasis and resolution of the acute inflammation. However, uncontrolled acute inflammation may become chronic, contributing to variety ofchronic inflammatory diseases. [1-4]

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Inflammation is commonly divided into 3 phases.

Acute inflammation:

It is the initial response to tissue injury which is mediated by release of autocoids and usually precedes the development of the immune response [5].

Acute inflammation has three major component

Alteration in vascular caliber that lead to local increase in blood flow(Vasodilation).

Structural changes in the microvasculature that permits proteins to leave thecirculation.

Emigration of the leukocytes from the micro circulation and accumulation in thefocus of injury.

These components account for three of the five classic local signs of acuteinflammation.

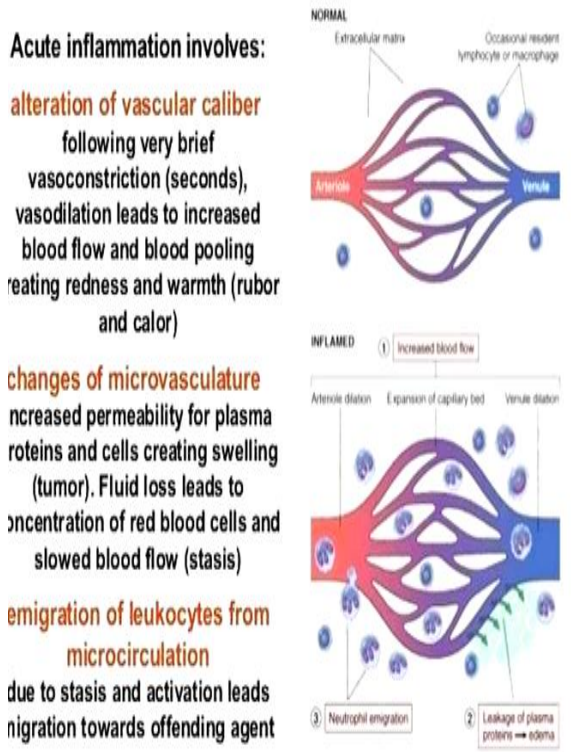

Fig 1: Process of inflammation

Process of Inflammation

The classical signs are [6] Redness (rubor)- Heat (calor)- Swelling (tumor)- Pain (dolor)- Loss of function (functiolaesa)

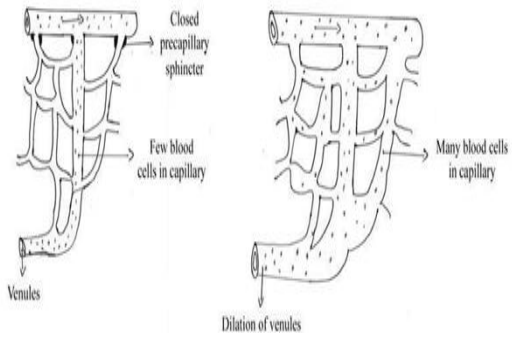

Fig 2: A diagrammatic representation from normal to acute inflammation

Vascular dilation

a. Sub-acute inflammation:

It is said to last for one to six weeks (or more) and is usually seen in tubular structures like an appendix (or) fallopian tube. It is characterized by vascular exudation, change of acute inflammation and proliferative changes of chronic inflammation. Here the exudates consists chiefly of eosinophils, lymphocytes, plasma cells, histeocytes and fibro blasts [7].

b. Chronic inflammation:

Chronic inflammation is considered to be inflammation of prolonged duration (weeks or months) in which active inflammation tissue destruction and attempts at repair are proceeding simultaneously. Although it may follow acute inflammation, chronic inflammation frequently begins insidiously as a low grade smoldering, often asymptomatic response. This later type of chronic inflammation includes some of most common and disabling human diseases such as rheumatoid arthritis, atherosclerosis, tuberculosis and chronic lung disease.

Treatment of Inflammation

To reduce inflammation and the resulting swelling and pain, injured tissue need to be properlytreated. The earlier you start treatment, the better. The treatment of acute inflammation consist of **"R.I.C.E"** therapy-Which stands for Rest, Ice, Compression, Elevation. For acute inflammation in the foot or ankle, your foot ankle surgeon will recommend the following: **Rest:** Stay off of your foot as much as possible to prevent further injury. In some cases, complete immobilization may be required. Your doctor

will decide whether you will need crutches and whether movement of your foot ankle is appropriate. Commonly used anti inflammatory agents such as Diclofenac, Ibuprofen, Indomethacin, Ketoprofen, Naproxen, Sulindac, Meloxicam.

Material and Methods

Materials used in experimental work

Corn silk (Zea mays L.) contains alkaloids; vitamins; saponins; proteins; carbohydrates; Na, K, Mg and Ca salts; fixed and volatile oils; steroids such as sitosterol and stigmasterol; tannins; and flavonoids. Inflammation usually occurs when infectious microorganisms such as bacteria, viruses or fungi invade the body, reside in particular tissues and/orcirculate in the blood. Inflammation may also happen in response to processes such as tissue injury, cell death, cancer, ischemia and degeneration. There have been many reports on the biological activities of corn silk constituents.

Chemical/Kit	Drugs	Instrument
Chloroform ethanol Petroleum ether	Indomethacin Carrageenan griess reagent (1% Sulphanilamide, 2% Phosphoric acid and 0.1% Naphtyl ethylenediamine dihydrochloride) aqueous plant extract	mercury displacement Plethysmograph

Collection and Authentication:- The plant *corn silk* were collected from localmarket of Bhopal.

Physico-Chemical Analysis

Determination of Ash

The ash remaining after the ignition of medicinal plant material is determinedby3 different methods which measure total ash, acid insoluble ash and water soluble ash.

- The total ash method is to measure the total amount of material remaining after ignition.
- Acid-insoluble ash is the residue obtained after boiling the total ash with dilute hydrochloric acid and igniting the insoluble matter. This measure the amount of silica present, especially as sand and siliceous earth.
- Water soluble ash is the difference in weight between the total ash and residues after treatment of the total ash with water.

Total ash

Place about 2-4g of the ground dried material, accurately weighed, in a previously ignited and tared crucible. Spread the material in an even layer and igniteit by gradually increasing the heat to 500-600^{0}C until it become white, indiacating the absence of carbon. Cool in a desicator and weigh. If carbon free ash cannot be obtained in this manner, cool the crucible and the residue with about 2 ml of water or a saturated solution of Ammonium nitrate. Dry on water bath, then on hot plate and ignite to constant weight. Allow the residue to cool in a suitable desicator for 30 min, and then weigh about without delay. Calculate the total ash in mg per g of air dried material.

$$\text{Total ash \%} = \frac{(W_2 - W_1)}{W} \times 100$$

Where W = Weight of sample, W1 = Weight of empty crucible W2 = Final weightof crucible

Acid insoluble ash

To the crucible containing the total ash, 25 ml of dil. HCl will be added and covered it with watch glass and boiled gently for 5 min. then the watch glass will be rinsed with hot water and this liquid will be added to the crucible. The insoluble matter on ash less filter paper will be collected and filter will be washed until the filtrate become neutral. The filter paper containing insoluble matter will be transferred to the original crucible, will be dried on hot plate and ignited to constant weigh. The residue will be allowed to cool in a suitable dessicator for 30 min and weighed without delayed. The content of acid insoluble ash is calculated in mg per gm of dried material.

$$\text{Acid Insoluble ash \%} = \frac{(W_2 - W_1)}{W} \times 100$$

Where, W = Weight of sample, W1 = Weight of empty crucible W2 = Final weightof crucible

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Water soluble ash

To the crucible containing the total ash, 25 ml of dil. HCl will be added and boiled for 5 minutes. The insoluble matter in a sintered glass crucible will be collected or on ash less filter paper. Then it will be washed with hot water and crucible is ignited for 5 min at temperature not exceeding 450□C. Subtract the weight of the residue in mg from the weight of total ash. The content of water soluble ash will be calculated in mg per g of air dried material.[33]

Determination of Moisture content:

Sample preparation: Seeds will be broken into smaller size and the use of high speedmills will be avoided in the preparation of sample.

Procedure : About 10 gm of drug will be taken in a evaporating dish and dried in the hot air oven at 105^0C for 5 hour and weighed , continue the drying and weighed after 1 hour interval until difference between two successive weighing correspond to not more than 0.25% constant weight. Constant weight is reached when two consecutive weightings after drying for 30 min, in a desicator, show not more than 0.01 gm difference. Then the percentage of loss on drying will be calculated with reference to the air dried drug.

Table 1: Evaluation of crude drug

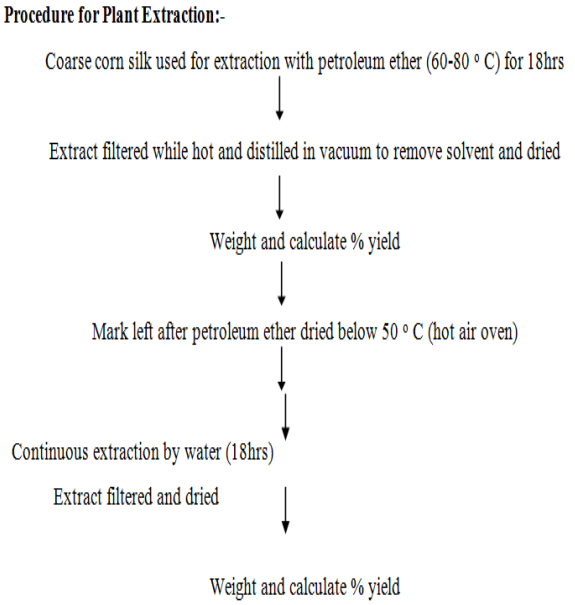
S. No.	Parameter of crude drug	Result % (w/w)
1	Total Ash	5.87
2	Acid insoluble ash	2.5
3	Water soluble ash	1.7
4	Moisture content	7.98

Extraction method:

Corn silk was dried at room temperature (24.2±1.0°C), and an aqueous extraction was performed by adding 100 mL boiling water to 10 g corn silk for20 min. The solution was then centrifuged at 12,000×gfor 30 min at 4°C. The supernatant was collected and lyophilized to form a powder.

Aqueous extract: The marc left after aqueous extraction will be dried completely in hot-air oven below 50^0C. The dried material was packed in a percolator. The aqueous extract was obtained by cold maceration of the successive marc in water. The mare wasdip in distilled water for three days. The extract was then collected through tape of the percolation. The excess water will be evaporated on water bath. The resultant extract will be distilled in vacuum under reduced pressure in order to remove the aqueous solvent completely. It will be dried and kept in a desiccators till experimentation. Obtained extract will be weight and percentage yield will be calculated in terms of air-dried powdered crude material [34].

Procedure for Plant Extraction:-



Phytochemical Analysis

1) Tests for Alkaloids

0.5 gm of leaves extract will be dissolved in 10 ml of dilute Hydrochloricacid (0.1 N) and filtered and this filtrate will be used to test the presence of alkaloids.

Mayer's test: Filterate will be treated with Mayer's reagent. Formation of yellow cream coloured precipitate will indicate the presence of alkaloids.

Mayer's reagent:

a) 1.36 gm of mercuric chloride dissolved in 60ml of distilled water.

b) 5 mg of potassium iodide dissolved in 20 ml of distilled water, and (a) & (b) will mixed together and volume will be adjusted to 100ml with distilled water.

Dragendroff's test: filterate will be treated with Dragndroff's reagent. Formation ofreddish brown

coloured precipitate will indicate the presence of alkaloids.

Dragendroff's reagent:

8 gm of bismuth nitrate dissolve in 20 ml of nitric acid.

27.2gm of Potassium iodide dissolved in 50 ml distilled water, and (a) & (b)will mixed together and volume will be adjusted to 100ml with distilled water.

Wagner's test: Filtrate will be treated with Wagner's reagent. Formation of reddish brown coloured precipitate indicate the presence of alkaloids

Wagner's reagent: 1.27 g of iodine and 2 g of Potassium Iodide dissolved in 5ml of water and this solution will be diluted to 100ml with water.

Hager's test: Filtrate will be treated with Hager's reagent. Formation of yellow coloured precipitate will indicate the presence of alkaloids.

Hager's reagent: Saturated solution of picric acid in distilled water.

Tests for carbohydrates

Molisch's test: Few drops of Molisch's reagent will added to the filtrate, followed by addition H2SO4 by the side of the test tube. The mixture will be then allowed to stand for two minutes and then diluted with 5 ml of distilled water. Formation of a red or dull violet colour at the interphase of the two layers was a positive test.

Molisch'reagent: 10gm of α-napthnol dissolved in 100 ml of 95% alcohol.

Barfoed's test: It is the general tests for monosaccharide**.** About 1ml of extract dissolved in distilled water and filtered. 1 ml of the filtrate was then mixed with 1 ml of Barfoed's reagent in a test tube and then heated on a water bath for a period of 2 minutes. Reddish precipitate of cuprous oxide was considered as a positive test.

Barfoed reagent: 13.3g of crystalline neutral copper acetate dissolved in 200ml of 1% acetic acid solution.

Fehling's test: The 1 ml of filtrate will be heated with 5 ml of equal volumes of Fehling's solution A (Copper sulphate in distill water) and Fehling's solution B(.Potassium tartarate and sodium hydroxide in distilled water). Formation of a red precipitate of cuprous oxide was an indication of the presence of reducing sugars.

Benedict's test: Filtrate will be treated with few drops of Benedicts reagent, (alkaline solution containing cupric citrate complex) and boil on water bath, reddish brown precipitate formation will indicate the presence of reducing sugars.

Tests for Glycosides:

0.5 gm of leaves extract will hydrolyzed with 20ml of dil. HCl (0.1N) and filtered. The filtrate will be used to test the presence of glycosides.

Modified Borntrager's test: The filtrate will treated with Ferric chloride solution and heated on a boiling water bath for 5 min. the mixture will be cooled and shaken with equal volume of benzene. The benzene layer will be separated and will treated with half its volume of ammonia solution. The formation of rose pink or cherry red colour in the ammonical layer will be indicated the presence of anthraquinones.

Keller killiani's test: Small portion of the filtrate will be shaken with 1 ml of glacial acetic containing a trace amount of ferric chloride solution. These contents are transferred to 2ml conc.sulphuric acid. A reddish brown layer acquires bluish green coplor appears due to presence of digitoxose.

Legal test: To the corn seed extract in pyridine, sodium nitroprusside is added to make it alkaline. Pink or red color is produced which shows the presence of cardiacglycosides.

Baljet test: 1 ml of filtrate solution will be treated with few drops of sodium picrate reagent. Formation of yellow to orange color will indicate the presence of cardiacglycosides.

4. Tests for Protein and Amino acids:

Millon's test: 2 ml of filtrate will be treated with 2ml of Millon's reagent in a testtube and heated in a water bath for 5 minutes, cooled, and few drop of $NaNO_2$ solution will be added. Formation of white precipitate, which will turns into red colour upon heating. This indicates the presence of proteins and amino acids.

Millon's reagent: It consists of mercury dissolved in nitric acid (forming a mixture of mercuric & mercurous nitrates).

Ninhydrin test: 2 ml of filtrate, 0.25% Ninhydrine reagent will be added in a testtube and boiled for 2 minutes. Formation of blue colour indicates the presence of amino acids.

Ninhydrin's reagent: 0.25% solution of ninhydrin in n-butanol.

Tests for phytosterols and Triterpenoids

Liebermann's Test: 2 ml of filtrate will be taken in a test tube and 2-3 drops of acetic anhydride was added and gently heated. The contents of the test tube were cooled. Few drops of concentrated sulphuric acid were added from the side of the test tube. A blue colour appears indicated the presence of sterols.

Libermann-Burchard test: 2 ml of filtrate will be dissolved in chloroform and few drops of acetic anhydride will be added to it, followed by concentrated sulphuric acid from the side of the tube. Formation of brown ring at the junction of two layers and the upper layer turns green which shows the presence of sterols and formation of deep colour will indicate the presence of triterpenoids.

Salkowaski Test: 2ml of filtrate will be taken in 2ml of chloroform and 2ml of conc. sulphuric acid will be added from the side of the test tube. The test tube will be shaken for few minutes. The development of red colour in the chloroform will indicate the presence of sterols and formation of yellow coloured lower layer indicates the presence of triterpenoids.

Test for Phenolic and Tannins

Ferric Chloride Test: Few drops of 1% ferric chloride solution were added to 2 ml of the filtrate, occurrence of a blue-black, green or blue-green precipitate indicates the presence of tannins.

Lead acetate Test: 2 ml of filtrate and few drops of lead acetate solution will bw added in attest tube. Formation of yellow precipitate will indicate the presence of tannins.

Test for flavonoids

Shinoda's test for flavonoids: About 0.5 of each portion was dissolved in ethanol, warmed and then filtered. To the seed extract few pieces of magnesium chips will be added in the test tube followed by few drops of conc. HCl. A pink, orange, or red to purple colouration indicates the presence of flavonoids.

Alkaline reagent test: To the test solution 2 ml few drops of sodium hydroxide will be added, formation of yellow colour which turns to colourless on addition of few drops of dilute hydrochloric dication for the presence of flavonoids.

Tests for Saponins

Foam Test: Dilute 1ml of leaves extract with distilled water and shaken vigorouslyfor about 5 minutes. Frothing which persisted on warming was taken as an evidence for the presence of saponins.[35]

Table 2: Phytochemical tests of aqueous extract of Corn Silk

S.No.	Chemical Test	Inference
1.	**Tests for Alkaloids**	
	Mayer's reagent:	Positive
	Dragendroff's reagent:	Positive
	Wagner's reagent	Positive
	Hager's reagent	Positive
2.	**Tests for carbohydrates**	
	Molisch's test	Positive
	Barfoed's test	Positive
	Fehling's test	Positive
	Benedict's test	Positive
3.	**Tests for Glycosides**:	
	Modified Borntrager's test	Positive
	Keller killiani's test	Positive
	Legal test	Positive
	Baljet test	Positive
4.	**Tests for Protein**	
	Millon's test	Positive
5.	**Amino acids:**	

	Ninhydrin test	Positive
6.	**Tests for phytosterols and Triterpenoids**	
	Liebermann's Test	Positive
	Libermann-Burchard test	Positive
	Salkowaski Test	Positive
7.	**Test for Phenolic and Tannins**	
	Ferric Chloride Test	Positive
	Lead acetate Test	Positive
8.	**Test for flavonoids**	
	Shinoda's test	Positive
	Alkaline reagent test	Positive
9.	**Tests for Saponins**	
	Foam Test	Positive

Pharmacological Activity

Selection of Dose: - The dose were selected on the basis of OECD guidelines 423, the dose were administered on the difference of 50 under 200, 500 and 1000 & 2000mg/kg. The significant dose was obtained at 1000 and 2000 mg/kg. So the 1/10 dose of these particular dose was 100,200 mg/kg according to OECD guidelines.

Description of groups:

Group 1 - Positive control (Vehicle treated)
Group 2 - Negative control (Disease induced)
Group 3 - Standard (Indomethacin 10mg/kg)
Group 4 - Test Group I (aquaous extract 100mg/kg)
Group 5 - Test Group II (aquaous extract200mg/kg)
The study will performed on one models:

Carrageenan-Induced Paw Edema

Carrageenan-induced paw edema, Carrageenan is a mixture of polysaccharides composed of sulfated galactose units. Its use as an endemogen was introduced by Winter et.al. 1962 Carrageenan initially releases histamine and serotonin followed by release of prostaglandins, protease and lysosomes producing edema. Paw edema was induced by injecting 0.1 ml of 1% w/v carrageenan suspended in 1% CMC into sub-plantar tissues of the left hind paw of each rat. Rats were divided into four groups; each group consisting of six animals.

The effect of oral administration of 200 and 400 mg/kg of the extract of Ficus virens, 40 mg/kg ibuprofen or vehicle (Saline, 10ml/kg) on the hind-paw oedema induced by sub plantar injection of 0.1ml Carrageenan (1% w/v) was evaluated according to the method described by Winter et al., (1962).8 In short, 0.1 mL of 1 % w/v carrageenan was injected into the sub plantar tissue of left hind paw of each rat. Swelling of carrageenan injected foot was measured at 0, 1, 2, 3 h using Plethysmometer (UGO Basile, Italy). Animals were treated with test extract 1hour before the carrageenan injection. Measurement was carried out immediately before and 3hrs following carrageenan injection. Percent inhibition of test drugs was calculated in comparison with vehicle control (100%).[36]

Discussion

The anti-inflammatory effect of the aquaous extract of corn silk on carrageenan induced hind paw edema as shown in Table. The aquaous extract of corn silk at doses 100 and 200 mg/kg produced a significant effect against carrageenan induced inflammatory effect and the results were comparable to that of control. Anti- inflammatory activity of aquaous extract of corn silk showed significant and similar to that of indomethacine (10 mg/kg). It was observed that the aquaous extract of corn silk (400 mg/kg, p.o.) exhibits maximum anti- inflammatory activity against Carrageenan induced hind paw edema. The inhibition obtained with aquaous extract of corn silk was 66.46 %. The dose of 200 mg/kgexhibited a significant inhibition of48 % after 4 h, the effect increased after 4h (52%). g). Effect of aquaous extract of corn silk on Carrageenan induced paw edema. The extract showed significant anti inflammatory activity ($p<0.001$) when compared to control butless activity when compared to indomethacin

ISSN: 0976-7126
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(p<0.001). It was observed that the aquaous extract of corn silk (400 mg/kg, p.o.) exhibits maximum anti-inflammatory activity against Carrageenan induced hind paw edema. The inhibition obtained with aquaous extract of corn silk was 66.46 % .

Table 3: Carrageenan-Induced Paw Edema in rats

GROUP	Paw thickness in mm				
	0 hr	1 hr	2 hr	3 hr	4 hr
Group-I Carrageenan (control)	1.8±0.03	3.7±0.06	4.6±0.05	6.5±0.06	4.6±0.03
Group-II Indomethacine (10mg/kg)	1.7±0.04	2.4±0.04**	2.8±0.05**	3.3±0.02**	2.3±0.03**
Group-III(100mg/kg)	1.2±0.02	3.3±0.03	4.3±0.05	4.5±0.02*	3.4±0.05**
Group-IV(200mg/kg)	1.3±0.01	2.6±0.05**	3.7±0.06*	3.4±0.05**	2.5±0.05**

Values were mean ± SEM, (n=6), *P<0.05, **P<0.01 Vs control. Data were analyzed by using One-way ANOVA followed by Dunnett's test

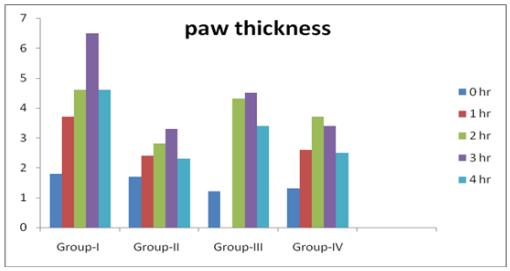

Fig 3: Graphical representation of Paw thicknessAnti-oxidant activity

Nitric Oxide scavenging activity

Free radical scavenging activity aquaous extract of corn silk was determined by using a rapid, simple and inexpensive method involving the use of the free radical, 2, 2-diphenyl- 1-picrylhydrazyl (DPPH). DPPH is a free radical of violet colour. The antioxidants present in the sample scavenge the free radicals and turn it into yellow colour. The colour change from violet to yellow is proportional to the radical scavenging activity. Briefly, sample stock solutions (1.0 mg/ml) were diluted to final concentrations of 50, 100,200, 600, 800, 1000 µg/ml, in ethanol. One ml of a 0.3 mm DPPH methanolic solution was added to 2.5 ml of sample solutions of different concentrations and allowed to react at room temperature. After30 min, the degree of reduction of absorbance was recorded in UV–Vis spectrophotometer at 518 nm.

Discussion

Nitric oxide scavenging activity was measured by using UV-Visible spectrophotometer. Sodium nitroprusside (5mM) in phosphate buffer was mixed with different concentrations of EEET (25-800 µg/ml), dissolved in normal saline and incubated at 25°C for 30 min. Control without test compound but with equivalent amount of sodium nitroprusside was taken. After 30 min 1.5 ml of the aquaous extract of corn silk showed promising free radical scavenging effect against nitric oxide induced release of free radicals in a concentration dependent manner.

The reduction of DPPH absorption is indicative of the capability of the sample to scavenge free radicals illustrates the DPPH radical scavenging ability of aqueous extract of corn silk and it showed excellent DPPH radical scavenging activity that was enhanced with increasing concentration. The IC_{50} value is found to be 60 mg/ml.

Table 4: Anti-oxidant activity using Nitric Oxide scavenging activity

S.No.	Concentration(mg/ml)	% inhibition
1	20	32
2	40	46
3	60	50
4	80	54
5	100	60

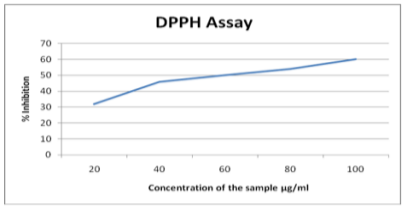

Fig 4: DPPH assay for different concentration of aqueous extract of corn silk

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ABTS assay

The ABTS+ assay was based on the procedure described by ABTS+radical [2,2′-azino-bis- (3-ethylbenzothiazoline-6-sulfonic acid)] was freshly prepared by adding 5 ml of 4.9 mM ammonium persulfate solution to 5 ml of 14 mM ABTS solution and kept for 16 h in dark. This solution was diluted with ethanol (99.5%) to yield an absorbance of 0.70±0.02 at 734 nm and the same was used for the assay. To 950 µl of ABTS radical solution, added 50 µl of extract solutions (25-500 µg/ml) and the reaction mixture was vortexes for 10 sec. After6 min the absorbance was recorded at 734 nm and compared with the control ABTS solution.

Discussion

Aqueous extract of corn silk known to scavenge the free radicals generated by ABTS by donating a hydrogen atom indicating aqueous extract of corn silk a potent anti-oxidant. Decolorization of ABTS is observed which expressed IC_{50}value of 60µg/ml.

Table 5: Anti-oxidant activity using ABTS assay

S.No.	Concentration(mg/ml)	% inhibition
1	20	18
2	40	33
3	60	50
4	80	53
5	100	62

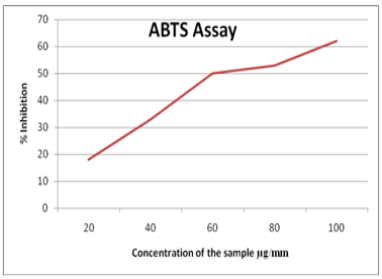

Fig 5: ABTS assay for different concentration of Leaves extract

Statistical analysis

The Statistical analysis will be carried out as per standard method. All result will be expressed as MEAN±SEM. Groups of data were compared with the analysis of variance (ANOVA) followed by dunnett's t-test values for statistical significant.

Conclusion

Corn silk has a great medicinal importance due the presence of a variety of bioactive phytochemical compounds. The principal phytochemicals present in corn silk include polyphenols, phenolic acids, flavonoids, anthocyanins, glycosides, carotenoids, and some water-soluble vitamins. Corn silk (Stigma maydis) has been used in traditional herbal medicine that it has been reported to be potentially antioxidant and healthcare applications. Active ingredients contributing to anti-inflammatory property are tannins, phenols, alkaloids, flavonoids, carotenoids, β-sitosterol, vanillin, hydroxymellein, moringine, moringinine, β-sitostenone, and 9-octadecenoic acid.Corn silk has beentraditionally used for the treatment of several ailments due to various pharmacological activities exhibited by its extracts. It has been found to possess antioxidant, antidiabetic, antiproliferative, antimutagenic, anticoagulant, antifungal, antiadipogenic, antiobesitic,antihypertensive, antihyperlipidemic, antilithiatic, antibiotic, antibacterial, antiseptic, anti-inflammatory, antidepressant, and anti-fatigue activities. It has been also reported to possess anti hyperglycemic, anti hyperlipidemic, diuretic, neuroprotective, hepatoprotective, and uricosuric activities. Corn silk has been investigated toactivate the receptors for the binding of human peroxisome proliferator activators used in the treatment of diabetes. The principal phytochemicals present in corn silk include polyphenols, phenolic acids, flavonoids, anthocyanins, glycosides, carotenoids, and some water-soluble vitamins. The presence of these phytochemicals makes corn a medicinal plant which shows various biological activities particularly the antioxidant activity. On the account of its high antioxidant potential, all parts of corn plant can be used for the management of oxidative stress and the treatment of various diseases.

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Cite this article as:
Ansari A. and Sahoo H.B. (2022). Potential activity of aqueous extract of *Corn Silk* on Carrageenan induced anti-inflammatory and antioxidant activity Using Albino Rats. *Int. J. of Pharm. & Life Sci.,* 13(2): 35-44.

Source of Support: Nil
Conflict of Interest: Not declared
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