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QUALITATIVE AND QUANTITATIVE STUDY OF PHYTOCHEMICALS AND ANTIULCER ACTIVITY OF CULLEN CORYLIFOLIUM SEED EXTRACT

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ABSTRACT
The present study was undertaken to investigate the phytochemical composition and antiulcer activity of the ethanolic seed extract of *Cullen corylifolium*. Successive extraction of the powdered seeds was carried out using chloroform, ethyl acetate, ethanol, and water. The ethanol extract exhibited the highest extractive yield (10.25% w/w). Preliminary phytochemical screening revealed the presence of alkaloids, glycosides, carbohydrates, flavonoids, tannins, and phenolic compounds, while steroids, proteins, amino acids, resins, and saponins were absent. Quantitative analysis showed that the ethanolic extract contained higher total phenolic content (0.765 mg/100 mg) and total flavonoid content (0.995 mg/100 mg) than the aqueous extract. The antiulcer activity of the ethanolic extract was evaluated in ethanol-induced gastric ulcer models in Wistar rats at doses of 100 and 200 mg/kg, with ranitidine (50 mg/kg) used as the standard drug. Treatment with the ethanolic extract significantly reduced the ulcer index in a dose-dependent manner, with values of 3.65 ± 0.25 and 3.15 ± 0.20 at 100 and 200 mg/kg, respectively, compared to 7.85 ± 0.42 in the control group. The extract also significantly increased gastric pH while reducing total acidity, free acidity, and pepsin activity. The gastroprotective effect observed at 200 mg/kg was comparable to that of ranitidine. The antiulcer activity is likely attributed to the presence of phenolic and flavonoid compounds possessing antioxidant and cytoprotective properties. The findings suggest that the ethanolic seed extract of *Cullen corylifolium* possesses significant antiulcer potential and may serve as a promising natural therapeutic agent for the management of gastric ulcers. Further studies are warranted to isolate the active constituents and elucidate their precise mechanisms of action.

KEYWORDS: *Cullen corylifolium*, Antiulcer activity, Ethanol-induced gastric ulcer, Phytochemical screening, Phenolic content, Flavonoids, Gastric acidity, Pepsin activity, Ranitidine, Gastroprotective activity.

INTRODUCTION

Peptic ulcer disease (PUD) is one of the most prevalent gastrointestinal disorders affecting millions of people worldwide and remains a significant cause of morbidity despite advances in medical therapy (Wang et al., 2011).

It is characterized by the formation of lesions in the gastric or duodenal mucosa due to an imbalance between aggressive factors, such as gastric acid, pepsin, reactive oxygen species, *Helicobacter pylori* infection, alcohol consumption, non-steroidal anti-inflammatory drugs (NSAIDs), and protective mechanisms including mucus secretion, bicarbonate production, prostaglandins, adequate blood flow, and antioxidant defense systems (Jaiswal et al., 2021).

Excessive alcohol consumption is recognized as one of the major causes of gastric mucosal injury, leading to inflammation, oxidative stress, lipid peroxidation, and disruption of the gastric epithelial barrier, ultimately resulting in ulcer formation (Hernández-Muñoz et al., 2000).

Although several antiulcer drugs, including proton pump inhibitors, H_2-receptor antagonists, antacids, and cytoprotective agents, are widely used in clinical practice, their long-term administration is often associated with adverse effects such as headache, diarrhea, vitamin B_{12} deficiency, rebound acid hypersecretion, drug interactions, and recurrence of ulcers after discontinuation of therapy (Reddy, 2021).

These limitations have encouraged researchers to explore medicinal plants as safer and more effective alternatives for the prevention and treatment of gastric ulcers. Herbal medicines have gained considerable attention because of their therapeutic efficacy, lower incidence of adverse effects, affordability, and the presence of multiple bioactive phytochemicals that act through diverse pharmacological mechanisms (El-Saadony et al., 2025).

Cullen corylifolium (L.) Medik. (synonym: *Psoralea corylifolia* L.), commonly known as Babchi, belongs to the family Fabaceae and is widely distributed in India, China, and other Asian countries. The seeds of this medicinal plant have been extensively used in traditional systems of medicine, including Ayurveda and Traditional Chinese Medicine, for the treatment of skin disorders, inflammation, microbial infections, osteoporosis, and various chronic diseases. Phytochemical investigations have revealed that the seeds contain a variety of biologically active constituents such as flavonoids, coumarins, meroterpenes, phenolic compounds, alkaloids, glycosides, and furanocoumarins including psoralen, isopsoralen, bakuchiol, bavachin, and corylifolin. These constituents exhibit antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, antidiabetic, anticancer, immunomodulatory, and gastroprotective properties (Khan et al., 2025).

Oxidative stress plays a central role in the development of gastric ulcers by promoting the generation of reactive oxygen species, depletion of endogenous antioxidants, lipid peroxidation, and cellular injury (Kwiecień et al., 2014).

Natural antioxidants, particularly phenolic compounds and flavonoids, have demonstrated remarkable ability to neutralize free radicals, reduce inflammatory responses, preserve gastric mucus integrity, enhance prostaglandin synthesis, and accelerate healing of gastric lesions (Repetto and Llesuy, 2002). Therefore, medicinal plants rich in these phytoconstituents are considered promising candidates for the development of novel gastroprotective agents.

Despite the diverse pharmacological activities reported for *Cullen corylifolium*, limited scientific evidence is available regarding its antiulcer potential and its influence on gastric secretory parameters. Therefore, systematic phytochemical evaluation and pharmacological investigation are necessary to validate its traditional use and establish its therapeutic significance (Gaur et al., 2024).

In the present study, successive solvent extracts of *Cullen corylifolium* seeds were prepared and evaluated for extractive yield and preliminary phytochemical composition. The ethanolic extract was further analyzed for total phenolic and total flavonoid contents and assessed for its antiulcer activity using the ethanol-induced gastric ulcer model in Wistar rats. The gastroprotective effect was evaluated by determining ulcer index, gastric pH, total acidity, free acidity, and pepsin activity and comparing the results with the standard antiulcer drug ranitidine. The study aimed to provide scientific evidence supporting the gastroprotective potential of *Cullen corylifolium* and to explore its suitability as a natural therapeutic agent for the management of peptic ulcer disease.

MATERIAL AND METHODS

Material

The seeds of *Cullen corylifolium* were collected, authenticated, dried, and powdered for extraction. Analytical-grade solvents including chloroform, ethyl acetate, ethanol, and distilled water were used for successive extraction. Chemicals and reagents required for phytochemical screening, estimation of total phenolic and flavonoid contents, and biochemical analysis were of analytical grade. Ranitidine was used as the standard antiulcer drug. Adult Wistar rats were used for the antiulcer study, and all experimental procedures were carried out using standard laboratory instruments and approved protocols.

Methods

Extraction by maceration method

Collected *Cullen corylifolium* seeds were cleaned properly and washed with distilled water to remove any kind of dust particles. Cleaned and dried plant materials were converted into moderately coarse powder in hand grinder. Powdered plant materials were weighed (40 gm) and packed in (250 ml) air tight glass Bottle. The plant materials were subjected to Successive extraction by Pet. ether, Chloroform, ethyl acetate, ethanol and water as

solvents for about 24 hrs (Kokate, 1994). The liquid extract was collected in a tarred conical flask. The solvent removed from the extract by evaporation method. The extracts obtained with different solvents were weighed to a constant weight and percentage w/w basis was calculated.

Determination of percentage yield

The percentage yields of extract were calculated by using following formula:

$$\text{Percentage yield} = \frac{\text{Weight of extract}}{\text{Weight of powder drug Taken}} \times 100$$

Phytochemical analysis

Preliminary phytochemical screening means to investigate the plant material in terms of its active constituents. In order to detect the various constituents present in the different extracts of seeds of *Cullen corylifolium*, were subjected to the phytochemical tests as per standard methods. Phytochemical screening was revealed for the presence of alkaloids, glycosides, carbohydrates, tannins, resins, flavonoids, steroids, proteins and amino acids (Audu *et al.,* 2007).

Quantitative estimation of phenols and flavonoids

Estimation of total phenol content

Estimation of total phenol content Total phenol content of the extracts was evaluated with folin-ciocalteu method (Mishra *et al.,* 2017). Samples containing polyphenols are reduced by the folin-ciocalteu reagent there by producing blue colored complex. The phenolic concentration of extracts was evaluated from a gallic acid calibration curve. To prepare a calibration curve, 2 ml aliquots of 5, 10, 15, 20, and 25 µg/ml gallic acid solutions were mixed with 1ml folin ciocalteu reagent (diluted ten-fold) and 1 ml (7.5 g/L) sodium carbonate. After incubation at 25°C for 10 min, the quantative phenolic estimation was performed at 765 nm against reagent blank by UV Spectrophotometer.

The calibration curve was constructed by putting the value of absorbance vs. concentration. A similar procedure was adopted for the extract (1000µg/ml) as above described in the preparation of calibration curve. All determinations were performed in triplicate. Total phenolic content was expressed as milligrams of gallic acid equivalent (GAE) mg per 100mg of extract.

Estimation of total flavonoids content

The aluminum chloride colorimetric method was modified (Mishra *et al.,* 2017). Quercetin was used to make the calibration curve. Ten milligrams of quercetin was dissolved in 10 ml methanol and then diluted for 5-25 µg/ml. The diluted standard solutions (2 ml) were separately mixed with 1 ml of 2% aluminum chloride. After incubation at room temperature for 10 min, the absorbance of the reaction mixture was measured at 420 nm with a UV spectrophotometer. Similarly, extracts solutions (1000 µg/ml) were reacted with aluminum chloride for determination of Flavonoid content. Total flavonoid content was expressed as milligrams of Quercetin equivalent (QE) mg per 100mg of extract.

Ethanol induced antiulcer activity of ethanolic extract of *Cullen corylifolium*

Animals

Wistar rats (180±20g) were housed in groups of six under a standard 12-hour light/dark cycle, with controlled temperature and humidity conditions maintained at 25±2 °C and 55–65%, respectively. They had ad libitum access to standard rodent chow and water. The rats were acclimatized to the laboratory environment for seven days prior to the experiments. All experiments were conducted in a soundproof room between 08:00 and 15:00 hours. A distinct group of six rats was utilised for each set of experiments. The animal studies received approval from the Institutional Animal Ethics Committee (IAEC), which oversees the control and supervision of experimental animals under the Ministry of Environment and Forests, Government of India, New Delhi, India.

Acute oral toxicity study

Toxicity studies were conducted in accordance with OECD guidelines, with a specific focus on the acute oral toxicity of *Cullen corylifolium* seed extract. An acute toxicity assessment was conducted in accordance with OECD Guideline No. 423, with rats monitored for any signs of toxicity over the subsequent 14 days. The *Cullen corylifolium* seed extract was administered orally at a safe dosage. Observations included clinical symptoms such as behavioral changes, alterations in eye appearance, shifts in body weight, and the condition of skin and fur (Gilani *et al.,* 2022; Kazmi *et al.,* 2023).

In vivo* antiulcer activity of ethanolic extract of *Cullen corylifolium

Animals

Wistar rats (150–200 g) were group housed (n= 6) under a standard 12 h light/dark cycle and controlled conditions of temperature and humidity (25±2 °C, 55–65%). Rats received standard rodent chow and water *ad libitum*. Rats were acclimatized to laboratory conditions for 7 days before carrying out the experiments. All the experiments were carried in a noise-free room between 08.00 to 15.00 h. Separate group (n=6) of rats was used for each set of experiments. The animal studies were approved by the Institutional Animal Ethics Committee (IAEC), constituted for the purpose of control and supervision of experimental animals by Ministry of Environment and Forests, Government of India, New Delhi, India.

Toxicity study

Healthy adult male albino rats were fasted overnight prior to the experiment. Different doses (50-2000 mg/kg, P.O) of the ethanolic extract of seeds of *Cullen corylifolium* were administered to each group of rats (Each group carries 6 rats) and they were observed continuously for 1 hour and then at half-hourly intervals for 4 hour, for any gross behavioural changes and further

up to 72 hour, followed 14 days for any mortality as per the OECD (Organization for Economic Co-operation and Development) Guideline 425 (OECD, 2008).

The ethanolic extract of seeds of *Cullen corylifolium* was found to be non-toxic up to the maximum dose of 2000 mg/kg body weight. Dose selected for antiulcer evaluation was 100 and 200 mg/kg respectively.

Experimental designs

Ulcer induced by absolute ethanol

The rats were divided into four groups of six each.

Group I (toxicant control) received absolute ethanol (1 ml/animal)

Group II was treated with ranitidine (50 mg/kg)

Groups III was treated with ethanolic extract of seeds of *Cullen corylifolium* 100 mg/kg/p.o.

Groups IV was treated with ethanolic extract of seeds of *Cullen corylifolium* 200 mg/kg/p.o.

The animals were treated with ranitidine (100 mg/kg), dose of ethanolic extract of seeds of *Cullen corylifolium* 100 and 200 mg/kg (once daily) for 5 days after the induction of ulcer, while the control group received only the vehicle. The rats were fasted for 24 h and they received 1 ml of absolute ethanol orally. The animals were sacrificed after 1 h of ulcerogen administration, and their stomachs were excised and the gastric contents were aspirated. The contents were subjected to centrifugation at 1000 rpm for 10 min and then analyzed for pH (digital pH meter), pepsin activity, total and free acidity.

Antiulcer Screening

The ulcer index was determined using the formula (Mousa *et al.*, 2019):

Ulcer index = 10/X

Where X = Total mucosal area/Total ulcerated area.

Based on their intensity, the ulcers were given scores as follows:

0 = no ulcer, 1 = superficial mucosal erosion, 2 = deep ulcer or transmural necrosis,

3 = perforated or penetrated ulcer.

Measurement of gastric acidity

The evaluation of gastric juice pH was conducted, as described by Beiranvand et al. In a concise manner, the gastric content from each rat was subjected to centrifugation at a speed of 5000 revolutions per minute for duration of 10 min. The resulting supernatant was carefully collected, and subsequently, 1 mL of the supernatant was mixed with an equal volume of distilled water. The pH of this mixture was then determined using a pH meter (Beiranvand *et al.*, 2021).

Statistical analysis

The experimental data are shown as the mean ± S.E.M for every experimental group. A one-way analysis of variance (ANOVA) was used to evaluate statistical differences among groups, followed by Tukey's post hoc test for multiple comparisons. A significant effect was found ($p < 0.05$).

RESULTS AND DISCUSSION

The present investigation was carried out to evaluate the phytochemical composition and antiulcer potential of the ethanolic seed extract of *Cullen corylifolium*. The results demonstrated that the plant possesses a rich phytochemical profile and exhibits significant gastroprotective activity against ethanol-induced gastric ulceration in experimental rats.

The extractive value study indicated that the ethanol extract produced the highest percentage yield (10.25% w/w), followed by the aqueous extract (8.25%), ethyl acetate extract (7.25%), and chloroform extract (6.32%). The higher yield obtained with ethanol suggests that the seeds contain a greater proportion of polar and moderately polar phytoconstituents, making ethanol a suitable extraction solvent for obtaining bioactive constituents. Similar findings have been reported for medicinal plants where hydroalcoholic or ethanolic solvents efficiently extract phenolics, flavonoids, glycosides, and alkaloids responsible for various pharmacological activities.

Preliminary phytochemical screening revealed the presence of several important secondary metabolites in the ethanolic extract, including alkaloids, glycosides, carbohydrates, flavonoids, tannins, and phenolic compounds. In contrast, steroids, resins, proteins, amino acids, and saponins were absent. The abundance of flavonoids and phenolic compounds in the ethanolic extract suggests that these constituents may contribute significantly to the observed biological activity. Flavonoids are well known for their antioxidant, anti-inflammatory, cytoprotective, and gastroprotective properties, while phenolic compounds are recognized for scavenging reactive oxygen species generated during gastric mucosal injury.

Quantitative estimation further supported these observations. The ethanolic extract exhibited higher total phenolic content (0.765 mg/100 mg) compared to the aqueous extract (0.685 mg/100 mg). Likewise, the total flavonoid content was considerably greater in the ethanolic extract (0.995 mg/100 mg) than in the aqueous extract (0.632 mg/100 mg). These findings indicate that ethanol efficiently extracted phenolic and flavonoid constituents, which are known to protect the gastric mucosa by reducing oxidative stress, inhibiting lipid peroxidation, enhancing mucus secretion, and improving mucosal defense mechanisms.

The antiulcer activity was evaluated using the ethanol-induced gastric ulcer model, a widely accepted experimental model that closely mimics acute gastric mucosal damage caused by excessive alcohol consumption. Ethanol induces ulceration through multiple mechanisms including excessive production of

reactive oxygen species, depletion of gastric mucus, increased acid secretion, vascular damage, inflammatory cell infiltration, and lipid peroxidation of gastric tissues.

Administration of the ethanolic extract significantly reduced the ulcer index in a dose-dependent manner. The control group exhibited a severe ulcer index of 7.85 ± 0.42, whereas treatment with ranitidine reduced the ulcer index to 2.65 ± 0.12. The ethanolic extract at doses of 100 and 200 mg/kg reduced the ulcer index to 3.65 ± 0.25 and 3.15 ± 0.20, respectively. The higher dose demonstrated protection comparable to the standard drug, indicating strong gastroprotective efficacy. The reduction in ulcer index suggests that the extract effectively protects the gastric mucosa against ethanol-induced injury.

Gastric pH was significantly increased following treatment with the ethanolic extract. The control animals exhibited a highly acidic gastric environment (pH 2.95 ± 0.25), whereas ranitidine increased the gastric pH to 4.82 ± 0.20. The ethanolic extract increased gastric pH to 3.75 ± 0.15 at 100 mg/kg and 4.35 ± 0.25 at 200 mg/kg. Elevation of gastric pH indicates a reduction in gastric acidity and contributes to enhanced mucosal protection by minimizing acid-mediated tissue damage.

Similarly, the extract significantly reduced both total acidity and free acidity in gastric juice. Total acidity decreased from 75.15 ± 0.15 mEq/L in the control group to 62.36 ± 0.15 mEq/L and 43.12 ± 0.20 mEq/L following treatment with 100 and 200 mg/kg of extract, respectively. Free acidity also showed marked reduction from 57.36 ± 0.15 mEq/L in the control group to 38.95 ± 0.10 mEq/L and 35.12 ± 0.25 mEq/L in the treatment groups. These findings indicate that the extract effectively suppresses gastric acid secretion, thereby reducing the aggressive factors responsible for ulcer formation.

Pepsin activity was also significantly lowered following extract administration. The control group exhibited pepsin activity of 3.75 ± 0.15 per mL/h, whereas ranitidine reduced it to 2.52 ± 0.17 per mL/h. The ethanolic extract decreased pepsin activity to 3.25 ± 0.20 and 2.56 ± 0.25 per mL/h at doses of 100 and 200 mg/kg, respectively. Reduction in pepsin activity is particularly important because pepsin accelerates digestion of damaged gastric mucosa and aggravates ulcer formation. Therefore, inhibition of pepsin contributes substantially to ulcer healing and mucosal protection.

The observed gastroprotective activity of the ethanolic extract can be attributed to the synergistic action of its phytoconstituents, particularly flavonoids, phenolic compounds, alkaloids, and glycosides. These constituents are known to enhance endogenous antioxidant defenses, inhibit oxidative damage, stabilize gastric mucus, reduce inflammatory mediators, improve gastric microcirculation, suppress gastric acid secretion, and promote regeneration of damaged gastric epithelial cells. The higher phenolic and flavonoid contents of the ethanolic extract strongly correlate with its superior antiulcer activity observed in the present study.

The findings demonstrate that the ethanolic seed extract of *Cullen corylifolium* possesses significant antiulcer activity against ethanol-induced gastric ulceration in rats. The gastroprotective effect appears to be dose dependent and is associated with reduction in ulcer index, suppression of gastric acid secretion, elevation of gastric pH, decreased pepsin activity, and the presence of bioactive phytochemicals with antioxidant and cytoprotective properties. These results support the traditional medicinal use of *Cullen corylifolium* in the management of gastric disorders and provide a scientific basis for its further investigation as a potential natural antiulcer therapeutic agent.

Table 1: Extractive values obtained from *Cullen corylifolium*.

S. No.	Extract	Colour	% Yield (w/w)
1.	Chloroform	Black solid	6.32
2	Ethyl acetate	Dark Brown solid	7.25
3	Ethanol	Dark Brown solid	10.25
4	Water	Brown solid	8.25

Table 2: Preliminary phytochemical screening of *Cullen corylifolium*.

S.N.	Phytoconstituents	Test Name	Chloroform	Ethyl acetate	Ethanol	Water
1	Alkaloids	Mayer's Test	-ve	+ve	+ve	+ve
		Dragendorff's Test	-ve	+ve	+ve	+ve
		Wagner's Test	-ve	+ve	+ve	+ve
		Hager's Test	-ve	-ve	-ve	-ve
2	Glycosides	Raymond's Test	+ve	+ve	+ve	+ve
		Killer Killani Test	+ve	+ve	+ve	+ve
		Legal Test	-ve	-ve	+ve	+ve
3	Carbohydrates	Molisch's Test	+ve	+ve	+ve	+ve
		Fehling's Test	+ve	+ve	+ve	+ve
		Benedict's Test	+ve	+ve	+ve	+ve

4	Tannins	Vanillin- HCl Test	-ve	-ve	-ve	-ve
		Gelatin Test	-ve	-ve	+ve	+ve
5	Flavonoids	Lead acetate Test	-ve	-ve	+ve	+ve
		Alkaline Reagent Test	-ve	-ve	+ve	+ve
6	Resins	Turbidity Test	-ve	-ve	-ve	-ve
7	Steroids	Libermann- Bur chard Test	-ve	-ve	-ve	-ve
		Salkowski Reaction	-ve	-ve	-ve	-ve
8	Proteins & Amino acids	Biuret Test	-ve	-ve	-ve	-ve
		Precipitation test	-ve	-ve	-ve	-ve
9.	Phenols	Ferric chloride test	-ve	-ve	+ve	+ve
10.	Saponins	Froth Test	-ve	-ve	-ve	-ve

Table 3: Total phenolic content of Hydroalcoholic extract of *Cullen corylifolium*.

S. N.	Extract	Total phenol content (mg/100mg)
1	Ethanol extract	0.765
2	Aqueous extract	0.685

Table 4: Total Flavonoid content of hydroalcoholic extract of *Cullen corylifolium*.

S. N.	Extract	Total Flavonoid content (mg/100mg)
1	Ethanol extract	0.995
2	Aqueous extract	0.632

Table 5: Effect of ethanolic extract of seeds of *Cullen corylifolium* on ulcer index by ethanol induced ulcers in rats.

Treatment and Dose	Ulcer Index (Mean ± SEM)
Control	7.85 ± 0.42
Ranitidine (50 mg/kg, p.o.)	2.65 ± 0.12***
Ethanolic extract of *Cullen corylifolium* (100 mg/kg, p.o.)	3.65 ± 0.25**
Ethanolic extract of *Cullen corylifolium* (200 mg/kg, p.o.)	3.15 ± 0.20***

Values are expressed as mean ± S.E.M. (n = 6).Values are statistically significant at $p<0.05$ vs. control group respectively (One-way ANOVA followed by Dunnett's test).

Table 6: Effect of ethanolic extract of seeds of *Cullen corylifolium* on gastric parameters i.e. pH by ethanol-induced ulceration in rats.

Treatment and Dose	Gastric pH (Mean ± SEM)
Control	2.95 ± 0.25
Ranitidine (50 mg/kg, p.o.)	4.82 ± 0.20***
Ethanolic extract of *C. aromaticus* (100 mg/kg, p.o.)	3.75 ± 0.15**
Ethanolic extract of *C. aromaticus* (200 mg/kg, p.o.)	4.35 ± 0.25***

Values are expressed as mean ± S.E.M. (n = 6). Values are statistically significant at $p<0.05$ vs. control group respectively (One-way ANOVA followed by Dunnett's test).

Table 7: Effect of ethanolic extract of seeds of *Cullen corylifolium* on gastric parameters i.e. total acidity ethanol-induced ulceration in rats.

Treatment and Dose	Total Acidity (mEq/L, Mean ± SEM)
Control	75.15 ± 0.15
Ranitidine (50 mg/kg, p.o.)	46.45 ± 0.25***
Ethanolic extract of *C. aromaticus* (100 mg/kg, p.o.)	62.36 ± 0.15*
Ethanolic extract of *C. aromaticus* (200 mg/kg, p.o.)	43.12 ± 0.20***

Values are expressed as mean ± S.E.M. (n = 6). Values are statistically significant at $p<0.05$ vs. control group respectively (One-way ANOVA followed by Dunnett's test).

Table 8: Effect of ethanolic extract of seeds of *Cullen corylifolium* on gastric parameters i.e. free acidity by ethanol-induced ulceration in rats.

Treatment and Dose	Free Acidity (mEq/L)
Control	57.36 ± 0.15
Ranitidine (50 mg/kg, p.o.)	24.85 ± 0.25 ***
Ethanolic extract of *Cullen corylifolium* (100 mg/kg, p.o.)	38.95 ± 0.10 **
Ethanolic extract of *Cullen corylifolium* (200 mg/kg, p.o.)	35.12 ± 0.25 ***

Values are expressed as mean ± S.E.M. (n = 6). Values are statistically significant at $p<0.05$ vs. control group respectively (One-way ANOVA followed by Dunnett's test).

Table 9: Effect of ethanolic extract of seeds of *Cullen corylifolium* on gastric parameters i.e. pepsin activity by ethanol-induced ulceration in rats.

Treatment and dose	Pepsin activity (Per ml/h)
Control	3.75 ± 0.15
Ranitidine (50 mg/kg, p.o.)	2.52 ± 0.17 ***
Ethanolic extract of *C. aromaticus* (100 mg/kg, p.o.)	3.25 ± 0.20 **
Ethanolic extract of *C. aromaticus* (200 mg/kg, p.o.)	2.56 ± 0.25 ***

Values are expressed as mean ± S.E.M. (n = 6). Values are statistically significant at $p<0.05$ vs. control group respectively (One-way ANOVA followed by Dunnett's test).

CONCLUSION

The present study demonstrated that the ethanolic seed extract of *Cullen corylifolium* possesses significant antiulcer activity against ethanol-induced gastric ulcers in rats. The extract was rich in phenolic and flavonoid compounds and effectively reduced the ulcer index, gastric acidity, free acidity, and pepsin activity while increasing gastric pH in a dose-dependent manner. The higher dose (200 mg/kg) exhibited gastroprotective effects comparable to the standard drug, ranitidine. These findings suggest that the antiulcer activity of *Cullen corylifolium* may be attributed to its phytoconstituents with antioxidant and cytoprotective properties. The study supports the therapeutic potential of *Cullen corylifolium* as a promising natural agent for the management of gastric ulcers, although further studies are required to isolate the active constituents and elucidate their mechanisms of action.

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