

## Anti ulcer Activity of Ethanolic Extract of *Kyllinga Triceps* Rottb. Rhizomes

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**Abstract:** *Kyllinga Triceps* family cyperaceae more over known as musta is a herbacious, perennial monocot grass scattered throughout India. In the present study plant extract is evaluated for anti ulcer activity with the help of ulcer index. Ranitidine is used as standard drug. Preliminary phytochemical studies and acute oral toxicity studies were also carried out. The extract showed significant reduction in Ph, gastric volume, total acidity and ulcer index in dose dependant manner as compared to control. The extract did not produced any toxic effect even at high doses. Anti ulcer effects are probably due to the presence of terpenes and terpenoids.

**Keywords:** *Kyllinga triceps*, ranitidine, ulcer index, terpenes and terpenoids, cyperaceae,

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### I. INTRODUCTION

Peptic ulcer disease is an illness. That affects a considerable number of people worldwide; ulcers are simply lesions penetrating the thickness of the gastro intestinal tract mucosa. It progresses when there is a disparity between the aggressive and protective factors at the luminal surface of the epithelial cells of stomach. Aggressive factors includes hydrochloric acid secretions, pepsin, non steroidal anti-inflammatory drugs, bile acids, ischemia, hypoxia, smoking and alcohol. Whereas defensive factors includes bicarbonate, mucosal blood flow, mucous layer protection, prostaglandins and growth factors, although a many anti ulcer drugs such as H<sub>2</sub> receptor antagonists, proton pump inhibitors and cytoprotectives are available for ulceration but all of these drugs have various undesirable effects such as arrhythmias, impotency and hematopoietic changes and limitations.

*Kyllinga triceps* rottb belonging to family cyperaceae commonly recognized as musta, is herb distributed throughout India. In ayurvedic literatures plant is reported as hepatoprotective, colon protective, anti diabetic, etc, these include its usefulness as an infusion, in skin rashes caused by allergies, treatment of burn, an appetizer, anti ulcer, liver tonic and to allay thirst. Phytochemical screening of the plant rhizomes extract confirms the presence of flavones, terpenes and terpenoids, carbohydrates, tannins and proteins. In the present study ethanolic extract of *kyllinga triceps* rottb. Rhizomes was evaluated for anti ulcer activity.

### II. MATERIALS AND METHODS

#### 2.1 Plant Authentication

Plant Material-fresh rhizomes of *kyllinga Triceps* Rottb. Were collected from Bhoora Khon area of Shivpuri District of Gwalior region, authenticated by Dr. (Smt) M.D. Gupta (Asst. Director) and Mr. N.K. Pandey (R.O.) National Research institute of Ayurveda and Siddha (CCRAS), Ministry for health and family welfare, Govt. of India, Amkho, Gwalior (M.P.)

#### 2.2 Extraction and Isolation

Freshly Collected Rhizomes were shade dried and powdered, the powder was subjected to cold percolation using eathnol as a solvent, the extract-was concentrated under vacuum, yields of ethanolic extracts was 6.6.

#### 2.3 Chemicals

All Chemical were analytical grade and chemical require for biochemical assay were obtained from span diagnostics, surat, India.

#### 2.4 Animal Model

Colony Bred healthy, adult male wistar albino rats (*rattus norvegicus*) weighing 175-200gm were used in the present study. The rats were housed in polypropylene cages under controlled conditions temperature (23-26<sup>0</sup>c), humidity (60-70%) and light (12 hrs light/dark cycle). They were provided with nutritionally adequate standard laboratory diet (lipton, india ltd. Banglore). And tap water ad libitum.

#### 2.5 Ethical Aspects

The study was approved by the institutional ethical committee (protocol No. 891/Po/ac/05/CPCSEA).

## 2.6 Acute oral toxicity

Acute oral toxicity was performed by using OECD guide lines-423, fixed dose procedure (FDP). Five wistar albino rats of either sex having weight 175-200gm were used for the study. Fixed dose levels of 50, 100, 200, 500, 1000 mg/kg were given initially to allow identification of a dose producing evident toxicity for the ethanolic and petroleum ether extracts of *kyllinga triceps* rottb. LD 50 of the alcoholic and pet. Ether extract of *kyllinga triceps* rottb. Was done as per OECD guideline. The alcoholic and pet. Ether extracts falls under class 4 (LD50>2000mg/kg). the animals did not show any signs of toxicity and behavioral changes.

## 2.7 Experimental Animals

Male wistar albino rats 4-6 weeks, 175-200 gm were used for the pharmacological studies. The animals were maintained in well ventilated room temperature (23-26<sup>o</sup>c) with natural day-night (12 hrs light/dark) cycle in the polypropylene cages. They were fed with balanced rodent pellet diet and tap water, throughout the experimental period. The animals were housed for one week, prior to the experiments to acclimatize the laboratory environment.

## 2.8 Ethanol Induced gastric ulcer Mode

Wister strain albino rats were divided into four groups, each group consist of 6 animals. All animals received treatment for 5 days. Group-I is served as control (2 %  $v/v$  tween 80, 5 ml/kg), P.O., Group-II received standard drug ranitidine 30 mg/kg body weight, P.O. group-III and group-IV received ethanolic extract of *kyllinga triceps* rottb. 250, 500 mg/kg, body weight, P.O., respectively. Gastric ulcers were induced in rats by administration of 1 ml 90%  $v/v$  eathnol P.O., animals were fasted for 24 hrs with free access to water prior to the test. Eathnolic extract control (2 % tween 80) and the standard drug (ranitidine) were given orally 30 min before administration of ethanol (90% $v/v$  1 ml/200gm) and animals were sacrificed after 15 min. the stomach was dissected out gastric juice was collected and it volume was measured the stomach was opened along the greater curvature rinised under a stream of water and pinned flat on a cork board, erosions formed on the glandular portion of stomach were counted and each was given a severity rating on 1-3 scale, based on diameter of the ulcer. The overall total diameter of ulcers in one stomach divided by factor 10 was designated as ulcer index. (Hollard et al, 1985).

The percentage ulcer protection was calculated using formula-

$$\text{Percentage of ulcer protection} = 1 - \left( \frac{U_t}{U_c} \right) \times 100$$

Whre  $U_t$  = ulcer index of treated group and  $U_c$  = ulcer index of the control group.

Rating scale for ulcer diameter

**Table-1**

S. No.	Ulcer diameter	Rating scale
1.	≤ 1 mm	1
2.	> 1 mm ≤ 2 mm	2
3	> 2 mm	3

## III. RESULT AND DISCUSSION

Anti ulcer activities was performed on wister rats using ethanol induced model, the ethanolic extract 500 mg/kg body weight showed significant anti ulcer activity ulcer index reduces at both doses of extracts of *Kyllinga Triceps* rottb., but the dose 500 mg/kg body weight is significant percentage of were protection of 500 mg/kg body weight is more when compared 15 dose 250 mg/kg of body weight, the volume of gastric juice is also reduced by both the extract, 500 mg/kg and 250 mg/kg body weight respectively.

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**Table-2**

S.No.	Treatment Groups	Ulcer Index (Mean ± S.E.M)	% Ulcer Protection	Volume of gastric juice
1.	Control	5.713 ± 0.1525	-	2.96570.493
2.	Ranitidine (30 mg/kg)	0.672 ± 0.1166	88.08%	1.696 ± 0.08711
3.	Ethanolic Extract <i>Kyllinga Triceps</i> Rottb (250mg/kg body weight)	2.162 ± 0.2156	61.89 %	2.2 ± 0.03554
4.	Ethanolic Extract <i>Kyllinga Triceps</i> Rottb (500mg/kg body weight)	0.865 ± 0.1111	84.89%	2.05 ± 0.06481

Values expressed as mean, one way analysis of variance (ANOVA)  $P < 0.0001$ , tukey Kramer multiple comparison test \*\*\*  $P < 0.001$  when compared with control group.

#### IV. CONCLUSION

The present study confirms that ethanolic extract of rhizomes of *Kyllinga Triceps* rottb. Have significant anti ulcer effects. The maximum anti ulcer protection has been shown by 500 mg/kg body weight extract. The plant can be used for future research in anti ulcer medication.

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