



## EVALUATION OF ANTI-ULCER ACTIVITY OF ETHANOLIC EXTRACT OF *TERMINALIA PALLIDA* LEAVES IN EXPERIMENTAL RATS

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### ABSTRACT

The anti-ulcer activity of Ethanolic extract of *Terminalia pallida* (Combretaceae) leaves EETP was investigated in pylorus ligation and ethanol induced ulcer models in wistar rats. In both models the common parameter determined was ulcer index. EETP at doses of 150,300 and 600 mg/kg p.o produced significant inhibition of the gastric lesions induced by Pylorus ligation induced ulcer & Ethanol induced gastric ulcer. The extract (150,300 and 600 mg/kg) showed significant ( $P < 0.01$ ) reduction in gastric volume, free acidity and ulcer index as compared to control. This present study indicates that *Terminalia pallida* leaf extract have potential anti ulcer activity in the both models. These results may further suggest that ethanolic extract was found to possess antiulcerogenic as well as ulcer healing properties, which might be due to its antisecretory activity.

**Key words:** *Terminalia pallida*, Pylorus ligation, ethanolic extract EETP  
Ulcer index.

### INTRODUCTION

In spite of tremendous development in the field of synthetic drugs during recent era, they are found to have some or other side effects, whereas plants still hold their own unique place, by the way of having no side effects. *Terminalia pallida* is a taxonomically and phylogenetically complex group, consisting of 20 genera and 500 species of trees, shrubs and lianas distributed mainly in tropical and subtropical countries. The Genus *Terminalia* Linn includes about 200 species of Trees and shrubs and distributed throughout the tropical and subtropical regions of the world[1]. Besides yielding high value of timber, many *Terminalia* Species are the source of various non-wood forest products[2]. Fruits are used as antipyretic, as a purgative, diuretic and against cold, cough. As decoction it is orally used to prevent diarrhea[3]. As powder applied externally on affected part and given orally with water to control diabetic and fruits are also consumed as dry pickles.

As paste, mixed with turmeric and applied externally to the toes and feet to cure fissures and cracks in feet and in veterinary medicine. Bark and leaves are used as anti-inflammatory, analgesic, fever, cold, cough, diabetic, dysentery and diarrhea. Fruit decoction is used to cure piles and diabetic [3].

### MATERIALS AND METHODS

#### Plant Materials

Fresh leaves were collected from Tirumala hills, Chittoor district, Andhra Pradesh, India and authenticated by Dr. K. Madhava Chetty, Assistant Professor, Department of Botany S.V. University, Tirupati, and Andhra Pradesh, India. Voucher Specimen No. 1295 is kept for further future reference at S.V. University, Andhra Pradesh, India.

#### Extraction of Plant Materials

The leaves were washed with fresh water to remove dirt and foreign particles and are washed with absolute ethanol to avoid the microbial growth, and were dried under the shade. The dried leaves were crushed and grinded to get powder and weighed. The powdered material of leaves of *Terminalia pallida* L., was refluxed successively with ethanol in Soxhlet extractor for 72 hrs. the solution so obtained was transferred to china dish and then allowed for drying. The extract so obtained was thoroughly washed with

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Ethyl acetate so as to remove the chlorophyll and was dried kept in a desiccators for further use.

**Preliminary Phytochemical screening**

The Phytochemical examination of the EETP was performed by the standard methods

**Selection of Animals:**

Wister albino rats of either sex weighing 180-220gms were used for the present study. They were procured from Sri Venkateswara enterprises Bangalore. They were acclimatized for one week under laboratory conditions they were housed in polypropylene cages and maintained at 25°C ± 2°C under 12 hours dark/light cycle and 65% humidity [4]. The rats were allowed standard rat feed pellets supplied by Hindustan lever co. Mumbai. The litter in the cages was removed thrice a week to ensure hygienicity and Maximum comfort for animals [5].

**Macroscopic evaluation of stomach**

The stomachs were opened along the greater curvature, rinsed with saline to remove gastric contents and blood clots and examined by a 10X magnifier lens to assess the formation of ulcers. The numbers of ulcers were counted[5][6].

**Pyloric ligation in rats**

**Scoring of ulcer will be made as follows:**

- Normal colored stomach..... (0)
- Red coloration..... (0.5)
- Spot ulcer..... (1)
- Hemorrhagic streak... (1.5)
- Deep Ulcers..... (2)
- Perforation..... (3)

Mean ulcer score for each animal will be expressed as ulcer index. The percentage of ulcer protection was determined as follows: Ulcer index (UI) was measured by using following formula:  $UI = UN + US + UP \times 10^{-1}$

**Where,**

UI= Ulcer Index; UN = Average number of ulcers per animal;

US = Average number of severity score; UP = Percentage of

Animals with ulcers

Percentage inhibition of ulceration was calculated as below:

**% Inhibition of Ulceration** =  $(\text{Ulcer index Control-Ulcer index Test}) \times 100$

Ulcer index Control

**Ulcer index (UI)** was measured by using following formula<sup>16</sup>:

$UI = UN + US + UP \times 10^{-1}$

**Where,**

UI= Ulcer Index; UN = Average number of ulcers per animal;

US = Average number of severity score; UP = Percentage of animals with ulcers

Percentage inhibition of ulceration was calculated as below:

**% Inhibition of Ulceration** =  $(\text{Ulcer index Control-Ulcer index Test}) \times 100$

Ulcer index Control

**Statically analysis.**

The Data obtained from pharmacological results were expressed as mean+SEM,n=6. Stastical analysis was performed with one way analysis of variance (ANOVA)<sup>19</sup> Followed by Student ‘t’ test by using Graphed Software.

**RESULTS**

**Phytochemical screening**

The Result of Phytochemical screening of the ethanolic extract of *Terminalia pallida* revealed That presence of alkaloids , flavonoids , carbohydrates, glycosides, tannins, terpenoids , phenols and absence of fixed oils and steroids [7][8].

**Pylorus ligation induced gastric ulcer**

In Pylorus ligation induced gastric ulcer modal, oral administration EETP in three different doses showed significant reduction in ulcer index, gastric volume, free acidity, total acidity as compared to the control group it was showing the protection index of 66.73% and 47.22% at the dose of 150 and 300mg/kg respectively in the comparison to control whereas ranitidine as reference slandered drug was reduction of ulcer 79.71% (Results are in table -1).

**DISCUSSION**

Pylorus ligation induced ulcer was used to study the effect of fruit extracts on gastric acid secretion and mucus secretion[9][10]. The ligation of the pyloric end of the stomach causes accumulation of gastric acid in the stomach. This increase in the gastric acid secretion causes ulcers in the stomach [13].

The original Albino rat model involves fasting of rats for 36 hours followed by ligation of pyloric end of the stomach [14]. The ulcer index is determined 5 hours after pylorus ligation. The lesions produced by this method are located in the lumen region of the stomach. Many authors have modified the original model[15].

The EETP and Ranitidine significantly decreased the total acidity and free acidity; this suggests that it having an antisecretory effect. And shows that protection of mucosal layer from ulceration and inflammation.

Fig.1: Macroscopically view of Pylorus ligation induced gastric ulcer

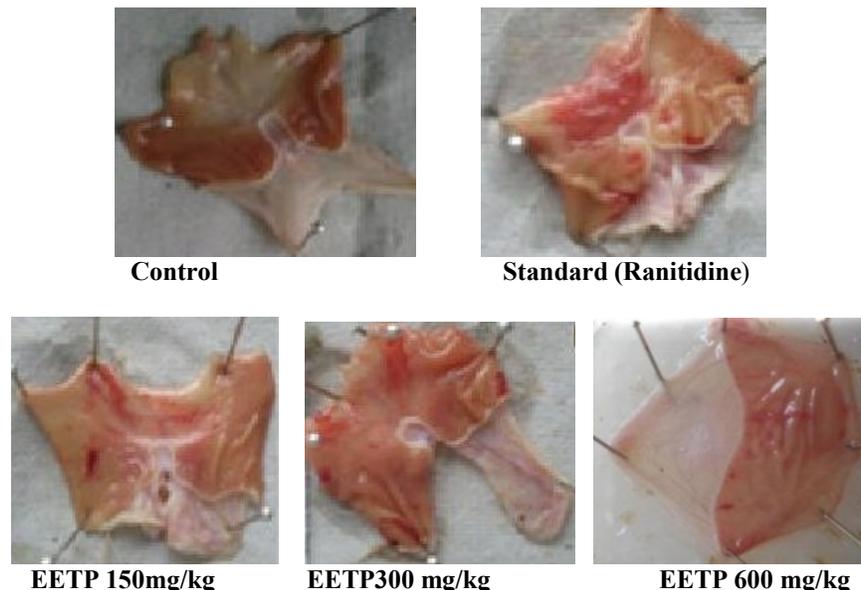


Table.5.16. Effect of EETP Pylorus ligation induced gastric ulcer

Groups	Treatment mg/kg	Volume of Gastric Juice (ml)	PH	Free Acidity (meq/l)	Total Acidity (meq/l)	Ulcer Index	Percentage inhibition of Ulcer (%)
I	Control	6.08 ±0.14	2.10 ±0.08	30.52 ±0.62	79.39 ±1.10	10.25 ±1.02	---
II	EETP 150	5.50 ±0.12	2.63 ±0.09	25.07 ±0.61	66.69 ±0.82	6.41 ±0.50	66.73**
III	EETP 300	4.28 ±0.10	2.43 ±0.09	19.56 ±0.83	59.95 ±0.80	5.41 ±0.52	47.22**
IV	EETP 600	3.73 ±0.11	3.90 ±0.12	15.62 ±0.73	44.40 ±1.08	3.16 ±0.49	40.10**
V	Standard	3.02 ±0.08	4.58 ±0.10	13.81 ±0.54	30.88 ±0.61	2.08 ±0.37	79.71**

Values are expressed as mean±SEM, n=3. \* p<0.05, \*\* p<0.01. Groups II to IV are compared with group I.

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