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EVALUATION OF GASTRIC ANTIULCER ACTIVITY OF METHANOLIC EXTRACTS OF *LANNEA COROMANDALICA*USING WISTAR RATS

A.D.S.Sai Lakshmi*, K.Teja Sri, M.Nirupa, M.Keerthi, N.S.Naga Devi, P.LokeshBabu, S.RajaSekhar, T.Bhanu Prasad
Department of Pharmacology, JITS College of Pharmacy, Kalgampudi, Andhra Pradesh, India.

ABSTRACT
The present study has been under taken with main objective of evaluating the aqueous extract of leaves of *Lanneacoromandalica*for antiulcer activity using rat as an experimental animal model. In aspirin plus pylorus ligation induced ulcer model, the methanolic extract of leaves of *Lanneacoramandelica* at doses of 200mg/kg and 400mg/kg P.O were found to be having significant, graded and dose dependent anti ulcer and anti secretory activity when compared to control group using ranitidine 50mg/kg as standard.

Key Words: methanolic extract, *Lanneacoramandelica*, antiulcer activity

Author for correspondence
A.D.S.Sai Lakshmi,
Department of Pharmacology,
JITS College of Pharmacy, Kalgampudi,
Andhra Pradesh, India.
Email id: sailakshmi400@gmail.com.

INTRODUCTION
Peptic ulcer disease (PUD) is a break in the inner lining of the stomach, the first part of the small intestine, or sometimes the lower esophagus. An ulcer in the stomach is called a gastric ulcer, while one in the first part of the intestines is a duodenal ulcer. The most common symptoms of a duodenal ulcer are waking at night with upper abdominal pain and upper abdominal pain that improves with eating.With a gastric ulcer, the pain may worsen with eating. The pain is often described as a burning or dull ache. Other symptoms include belching, vomiting, weight loss, or poor appetite. About a third of older people have no symptoms.[1] Complications may include bleeding, perforation, and blockage of the stomach.[2] Bleeding occurs in as many as 15% of cases.Common causes include the bacteria *Helicobacter pylori* and non-steroidal anti-inflammatory drugs (NSAIDs). Other, less common causes include tobacco smoking, stress due to serious illness, Behcet disease, Zollinger-Ellison syndrome, Crohn disease, and liver cirrhosis. Older people are more sensitive to the ulcer-causing effects of NSAIDs. The diagnosis is typically suspected due to the presenting symptoms with confirmation by either endoscopy or barium swallow. *H. pylori* can be diagnosed by testing the blood for antibodies, a urea breath test, testing the stool for signs of the bacteria, or a biopsy of the stomach.[1] Other conditions that produce similar symptoms include stomach cancer, coronary heart disease, and inflammation of the stomach lining or gallbladder inflammation.Diet does not play an important role in either causing or preventing ulcers.Treatment includes stopping smoking, stopping use of NSAIDs, stopping alcohol, and taking medications to decrease stomach acid. The medication used to decrease acid is usually either a proton pump inhibitor (PPI) or an H2 blocker, with four weeks of treatment initially

recommended. Ulcers due to *H. pylori* are treated with a combination of medications, such as amoxicillin, clarithromycin, and a PPI. Antibiotic resistance is increasing and thus treatment may not always be effective. Bleeding ulcers may be treated by endoscopy, with open surgery typically only used in cases in which it is not successful (1-4). The herbal medicines are affective in the treatment of various life threatening diseases.Very often these drugs are unscientifically exploited and improperly used. Therefore this plant drug deserves detail studies in the light of modern science. The detailed investigation and documentation of plants used in the health traditions and pharmacological evaluation can lead to the development of invaluable plant drugs for many dreaded disease (5). Therefore based on the above facts, the present study has been under taken with main objective of evaluating the aqueous extract of leaves of *Lanneacoromandalica*for antiulcer activity using rat as an experimental animal model.

MATERIALS AND METHODS

Preparation of extract

The shade dried coarsely powdered leaf of *Lanneacoromandelica* was extracted using methanol as solvent by continuous hot extraction process using soxhlet apparatus the extraction was till the completion. After completion of extraction the extract was stored in an air tight container in refrigerator below 10Ċ.

Experimental Animals (6, 7)

Colony inbred alibinowistar strain rats (either sex) weighing 130 – 180 gms were used. The animals were maintained in well ventilated room. Temperature with natural day night cycle in polypropylene cages. They were fed with balanced rodent pellet diet and tap water and libitium throughout the experimental period. The animals were housed for one week prior to the experiments to acclimatize to laboratory conditions. The animals were randomly distributed into 5 groups with three animals in each group.

Acute toxicity studies

By using OECD guidelines (organization of economic cooperation and development) for the study.

Acute toxic class method

The acute toxic class method is a step wise procedure with three animals of a single sex for step. Depending on mortality and / or moribund status of the animals on the average 2 to 4 step may be necessary to allow judgments on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data for scientific conclusion.The method used defined doses (5, 50, 300, 2000 mg/kg body weight) and the results allow a substance to be ranked and classified according to the globally harmonized system (GHS) for the classification of chemical which causes acute toxicity.

The methanolic extract of *Lanneacoromandelica* leaf starting dose 200mg/ kg body weight P.O. was used (as most of the crude extracts possess LD 50 value more than 2000 mg / kg body weight P.O.) Body weight of the rats before and after termination was noted and any changes in skin, fur, eyes and mucous membrane and also respiratory, circulatory, autonomic and central nervous system and vasomotor activity and behavior pattern were observed and also sign of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma were noted. The onset of toxicity and signs of toxicity were also noted if any.

Aspirin plus pylorus ligation method (APL):

The animals were placed in cages with grating floor to avoid coprophagy and divided in to five groups viz., Group I receiving 4% tween80 served as vehicle control , Group II received aspirin 200 mg /kg p.o suspended in 4%tween80. Group III and IV received the methanolic extract of *Lanneacoromandelica* (MELC) at doses of 200 Mg /kg and 400 mg/kg respectively by oral route group V received Ranitidine 50 Mg /kg orally serving as standard drug control for aspirin plus pylorus ligation method(APL) models. All the extracts and reference drug were suspended in 4%tween80 for animal administration aspirin was administered once daily for 6days Ranitidine and extracts were administered 30 min before each aspirin administration . On day 6 after last dose the rates were kept for 18 hours fasting. Pylorus ligation was done following the method the animals were deprived of water during the post operative period after 4 hours stomachs were dissected out and contents were collected in tubes for estimation of biochemical parameters.

RESULTS AND DISCUSSION

Evaluation of antiulcer activity

The result of the effect of methanolic extract of leaves of *Lanneacoromandelica*(linn) on gastric secretion,ulcer index, free acidity,and pH are shown in table-1 and 2 oral administration of test extract of Albino rats caused significant decrease in ulcer index and the percentage of gastric protection was 19.13% (standard), 82.39%(positive control),34.47% (low dose) 67.78% (high dose).when compared to control there was also significant decrease in volume of gastric juice and increase in PH. The acidity was also decreased to a significant extent,the statical analysis was carried out by using one-way ANOVA followed by DUNNETS TEST using SSPS Software version.

Table-1 Effect of methanolic extract of *Laneacoromandalica* (Linn) leaves on gastric secretion of aspirin Induced ulceration in rats

Group No	Bodywt gms	Treatment	Volume of gastric juice(ml)	Free acidity (Eq/l)100g	Total acidity (Eq/l)100g	pH	ALP
1 Control	160 180 145 135 140 145 150.83±16.55	control	2.9 3.1 2.8 3.2 2.6 3.1 2.95±0.22	11 10 12 11 7 15 11±2.5	19 22 21 20 17 26 20.83±3.06	4.1 4.3 3.3 4.2 3.7 3.6 3.27±0.27	44.45 ± 0.129
2 Positive control	155 160 150 155 170 185 162.5±12.94	Positive control (aspirin)	3.2 3.5 2.8 3.8 3.6 2.9 3.3±0.4	24 36 28 29 23 32 28.66±4.88	51 67 52 60 54 59 58.16±5.49	2.8 2.5 2.7 3.1 2.2 3.2 2.75±0.37	195.824
3 Standard	160 175 140 170 165 155 160.83±12.41	Standard (aspirin + Ranitidine)	2.8 2.7 3.5 3.8 2.9 3.1 3.13±0.43**	10 10 8 11 14 7 19.83±1.83**	19 22 18 20 22 18 10±2.44**	4.1 4.2 4.9 4.5 4.2 3.8 4.28±0.37**	24.14

4 Low dose	160 150 165 160 145 135 152.5±11.29	Methanolic extract of leaves of *Laneacoromandalica* (200mg/kg)	1.8 2.1 1.6 2.2 2.8 1.7 2.03±0.44*	7 6 7 8 5 10 7.16±1.72*	16 14 15 17 11 19 15.33±2.73*	4.5 4.2 4.9 4.5 4.2 3.8 4.28±0.31*	32.14
5 High dose	165 170 150 175 180 130 161.66±18.61	Methanolic extract of leaves of *Laneacoromandalica* (400mg/kg)	1.4 1.7 1.6 1.7 2.0 1.5 1.65±0.20**	7 4 5 3 6 8 5.5±1.87**	11 9 8 10 13 12 10.5±1.87**	5.0 4.9 4.9 4.7 4.8 4.9 4.86±0.10**	29.23

***P<0.05,**P<0.01 Dunnets test vs control**

Table-2 effect of methanolic extract of *Lanneacoromandalica* leaves on aspirin plus pylorous ligation induced ulcer in rats

Group No	Body wt. Gms	Treatment	Normal colored stomach	Red coloration	Spot ulcer	Streaks hemottnagic	U ≥ 3 ≤ 5	U > 5	Total score	Mean ulcer I±sem	Total protection
1 Control	160 180 145 135 140 145	control	- - - - - -	0.5 0.5 0.5 0.5 0.5 0.5	1 1 1 1 1 1	1.5 - - - 1.5 1.5	- - 2 2 2 -	- - - - - -	3.0 1.5 3.5 3.5 4.0 3.0	2.5±1.917	

2 Positive control	155 160 150 155 175 180	Positive control	- - - - - -	0.5 0.5 0.5 0.5 0.5 0.5	1 1 1 1 1 1	1.5 1.5 1.5 1.5 1.5 1.5	- - 2 - 2 2	- - - - - -	3.0 3.0 3.0 3.0 3.0 3.0	6.0±1.095	19.13%
3 Standard	160 175 140 170 165 155	standard	- - - - - -	0.5 0.5 0.5 0.5 0.5 0.5	1 1 1 1 1 1	1.5 1.5 - - 1.5 -	- - - - - -	- - - - - -	3.0 3.0 1.5 3.0 1.5 1.5	4.083±3.493*	82.39%
4 Low dose	160 180 145 135 140 145	Low dose Of methanolic extract of *Lanneacoromandalica* (200mg/kg)	- - - - - -	0.5 0.5 0.5 0.5 0.5 0.5	1 1 1 1 1 1	1.5 1.5 - - - -	- - - - - -	- - - - - -	1.5 3.0 2.0 1.5 1.5 1.5	3.50±1.643	34.47%
5 High dose	165 170 150 175 180 130	high dose Of methanolic extract of *Lanneacoromandalica* (400mg/kg)	- - - - - -	0.5 0.5 0.5 0.5 0.5 0.5	1 1 1 1 1 1	1.5 - 1.5 - 1.5 1.5	- - 2 2 - -	- - - - - -	3.0 0 2.5 4.0 5.0 3.0	2.73±1.380**	67.786 %

***P<0.05,**P<0.01 Dunnets test vs control**

CONCLUSION

The methanolic extracts of leaves of *Lanneacoramandelica* showed significant, graded and dose dependent anti ulcer activity in aspirin plus pylorus ligation induced ulceration in rats.In aspirin plus pylorus ligation induced ulcer model, the methanolic extract of leaves of *Lanneacoramandelica* at doses of 200mg/kg and 400mg/kg P.O were found to be having significant, graded and dose dependent anti ulcer and anti secretory activity when compared to control group using ranitidine 50mg/kg as standard. Thus from the present study it can be concluded that the methanolic extract of leaves of *Lanneacoramandelica* anti ulcerogenic and antisecretory activity in aspirin plus pylorus ligation induced ulceration in rats.

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