Rajani A. *et al*. / *International Journal of Phytopharmacology.* 5(3), 2014, 198-200.

e- ISSN 0975 – 9328
Print ISSN 2229 – 7472

International Journal of Phytopharmacology

Journal homepage: www.onlineijp.com

IJP

EVALUATION OF ANTI-ULCER ACTIVITY OF METHANOLIC EXTRACT OF LEAVES OF *TRICHOPUS ZEYLANICUS*

A.Rajani[1], M.Vishnu Vardhan Reddy[1*], Jincy Thomas[1], S.Nikitha[1], K.Hemamalini[2]

[1]Sree Dattha Institute of Pharmacy, Sheriguda, Ibrahimpatnam, Greater Hyderabad, Andhra Pradesh, India.
[2]Research Scholar, Bhagwanth University, Ajmer, Rajasthan 305023, India.

ABSTRACT

Trichopus zeylanicus Gaertn is a perennial herb, belongs to the family Trichopodaceae. The plant is reported for varied ethnic medicinal uses. As there is no literature available on anti-ulcer activity of leaves of *Trichopus zeylanicus*, the present study was taken up to evaluate for anti-ulcer activity of methanolic extract of leaves of *Trichopus zeylanicus*. The phytochemical study of methanolic extract showed the presence of saponins, alkaloids, flavonoids, steroids, triterpenoids, carbohydrates and proteins. Acute toxicity studies were performed as per OECD guidelines 423. Anti-ulcer activity was evaluated in aspirin induced ulcer model in swiss albino rats in the dose of 200, 300 and 500mg/kg body weight. Ranitidine was used as standard reference. All the tests extracts and standard were administered orally. The study concluded that, the methanolic leaf extract of *Trichopus zeylanicus* showed significant ($p<0.01$) anti-ulcer activity in a dose dependent manner. The test extracts showed a significant reduction in the ulcer score, ulcer number and ulcer index in aspirin induced ulcer model in rats.

Key words: *Trichopus zeylanicus* Gaertn, Anti-ulcer activity, Aspirin, Ranitidine.

INTRODUCTION

Ulcers occur due to imbalance between gastric acid secretion and gastric mucosal integrity. Factors such as stress, smoking, nutritional deficiency, drugs like NSAID's can increase the incidence of gastric ulcers. It is reported that prolonged anxiety, burns and trauma cause severe gastric irritation.

Trichopus zeylanicus Gaertn is a perennial herb, belongs to the family Trichopodaceae, that shows various pharmacological activities. The plant was found to show hepatoprotective activity (Subramoniam A *et al*., 1998), aphrodisiac activity (Subramoniam A *et al*., 1997), immunomodulatory activity (Pushpangadan P *et al*., 1995), antifatigue, antioxidant, adaptogenic properties (Singh B *et al*., 2001) (Tharakan B *et al*., 2005) and anti-ulcer activity (Sharma AK *et al*., 1898). As there is no literature available on anti-ulcer activity, the study was designed to evaluate for the same.

Corresponding Author

M.Vishnu Vardhan Reddy
Email: vishnumanchi.reddy@gmail.com

MATERIALS AND METHODS

Plant collection, identification and authentication

The specimen was collected from S.V University, Tirupati and identified as *Trichopus zeylanicus* belonging to the family Trichopodaceae, and authenticated by Dr.Madhavachetty, Botanist, Tirupati with the Voucher No: SDIP, Ref No: 003.

Preparation of plant extract

The fresh leaves of *Trichopus zeylanicus* were collected, dried in shade under room temperature, powdered mechanically and sieved through No. 20 mesh sieve. The finely powdered leaves were kept in an airtight container until the time of use. The extraction was carried out by continuous distillation process using Soxhlet apparatus (Manza MM and Oommen PS, 2013). The solvent used was a mixture of methanol: water in the ratio

of 7:3. The extract was concentrated to dryness under controlled temperature between 50-60 ºC.

Animals used for the study

Adult male swiss albino rats (170-200 gms) were used for the study and kept at the laboratory animal house of Sree Dattha Institute of Pharmacy for acclimatization to laboratory environment. They were kept in well cross ventilated room at 27±2^{o}C for 1 week before the commencement of experiment. Animals were provided with commercial rodent pellet diet and water *ad libitum*. Experiments were carried out as per the rules and regulations of CPCSEA.

Acute toxicity

Acute oral toxicity studies were performed as per OECD guidelines 423, dosed each animal till the dose of 2000mg/kg,b.w.p.o. The animal was observed continuously for 2hrs for gross behavioral changes and intermittently once every 2hrs and finally at 24 and 72hrs to note any signs of toxicity including death.

ANTI-ULCER ACTIVITY

Aspirin induced gastric ulcers model

Aspirin at a dose of 250mg/kg p.o was administered to induce ulcers after 30min of treatment with various doses of methanolic extract of *Trichopus zeylanicus* leaves (Singh R *et al*., 2005).

Adult male swiss albino rats weighing 170-200gms were divided into five groups of six rats in each group and the treatment protocol is as follows:

Group A: Control, treated with normal saline
Group B: Aspirin in the dose 250 mg/kg Body weight
Group C: Standard, treated with Ranitidine (50mg/kg p.o)
Group D: Test-1, treated with 200mg/kg p.o
Group E: Test-2, treated with 300mg/kg p.o
Group F: Test-3, treated with 500mg/kg p.o

After the treatment with varied doses of test extracts and standard drug, Aspirin in the dose of 250mg/kg p.o was administered after 30min. After 6hrs, the rats were sacrificed and their abdomen was opened for determination of gastric lesions, washed with warm water and examined for ulcers. The ulcer index was scored and percentage protection was also reported.

Scoring of ulcer

0 = Normal stomach
0.5 = Red coloration
1 = Spot ulcers
1.5 = Haemorrhagic streaks
2 = Ulcer >3mm but <5mm
3 = Ulcer >5mm

Ulcer index = UA + US + UP/10

Where;
UA = Average number of ulcers per animals
US = Ulcers severity score
UP = Percentage of animals with ulcers
UP = Total ulcers I a group/Total number of animals X 100

The formula for calculating percentage ulcer inhibition is as follows:

% Inhibition = UIC – UIT/UIC X 100

Where;
UIC = Ulcer index of control group
UIT = Ulcer index of test group

Table 1. Anti-ulcer activity of methanolic extract of Leaves of *Trichopus zeylanicus* in aspirin induced ulcers

Treatment	Dose	Ulcer index	% of Protection
Control (Normal Saline)	---	0**	100
Negative control (Aspirin)	250mg/kg	23.27 ± 0.17	---
Standard (Ranitidine)	50mg/kg BW	10.08 ± 0.05	56.68
METZ	200 mg/kg BW	15.33 ± 0.06*	34.12
METZ	300 mg/kg BW	14.95 ± 0.11*	35.75
METZ	500mg/kg BW	12.18 ± 0.03*	47.65

RESULTS AND DISCUSSION

The preliminary photochemical screening of *Trichopus zeylanicus* showed for the presence of carbohydrates, proteins, saponins, alkaloids, flavonoids, steroids, triterpenoids. The methanolic extract of *Trichopus zeylanicus* yielded sufficient quantity of the extract (58%). The results of anti-ulcer activity were tabulated in Table No: 1 and are expressed as Mean ± SEM (by one way ANOVA followed dunnett's t test). In aspirin induced ulcer model, a significant rise in ulcer index (23.27 ± 0.17) are noted. Standard drug Ranitidine (50mg/kg) treatment has significantly reduced ulcer index (0) and similarly the varied doses of test extracts showed a significant reduction in the ulcer index (15.33 ± 0.06, 14.95 ± 0.11 and 12.18 ± 0.03) and the ulcer formation (34.12%, 35.75 % and 47.65%) is significantly reduced. Therefore the study concluded that the methanolic extract of leaves of *Trichopus zeylanicus* Gaertn exhibited good anti-ulcer property in a dose dependent manner.

ACKNOWLEDGEMENTS

Authors express their heartfelt thanks to the Management and Directors of Sree Dattha Institutions, Sheriguda, Ibrahimpatnam, Greater Hyderabad for providing us the facilities to carry out the research work and for their constant encouragement.

REFERENCES

Manza MM and Oommen PS. Cytotoxic and Antimicrobial studies on Arogyapacha or Kerala Ginseng Leaf Extracts. *International Journal of Pharmaceutical Chemical and Biological Science,* 3(2), 2013, 315-319.

Pushpangadan P, Sharma AK, Rajasekharan S. An Ethnopharmacology of *Trichopus zeylanicus* The Ginseng of Kerala: a review. In: Pushpangadan P, Nyman U and George, V. Eds., *Glimpse of India Ethnopharmacology*, TBGRI, Trivandrum, India. 1995, 137-145.

Sharma AK, Pushpangadan P, Chopra CL, Rajasekharan S and Saradmmal L. Adaptogenic activity of seeds of *Trichopus zeylanicus* Gaertn. The Ginseng of Kerala, *Ancient Sci.life,* 8, 1898, 212-219.

Singh B, Gupta DK and Chandan BK. Adaptogenic activity of a glycol-peptido-lipid fraction from the alcoholic extract of *Trichopus zeylanicus* Gaertn. *Phytomed,* 8(4), 2001, 283-291.

Singh R, Jain A, Panwar S, Gupta D, Khare SK. Antimicrobial activity of some natural dyes, Dyes and Pigments. 2005, 1-7.

Subramonia A, Evans DA, Rajasekharan S and Pushpangadan P. Hepatoprotective activity of *Trichopus zeylanicus* extract against paracetamol-induced hepatic damage in rat. *Indian J. of Exp.Biology,* 36, 1998, 385-389.

Subramoniam A, Madhavachandran V, Rajasekharan S and Pushpangadan P. Aphordisiac property of *Trichopus zeylanicus* extract in male mice. *J. Ethnopharmacol,* 57, 1997, 21-27.

Tharakan B, Dhanasekaran M and Manyam BV. Antioxidant and DNA protecting properties of anti-fatigue herb *Trichopus zeylanicus. Phytother. Res,* 19(8), 2005, 669-673.