ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 13, Issue 2, 2020

Online - 2455-3891
Print - 0974-2441

Research Article

ANTIULCER ACTIVITY OF ELECTROHOMEOPATHIC DRUG (SPAGYRIC ESSENCE) CANCEROUS 15 - 3rd DILUTION AGAINST INDOMETHACIN-INDUCED GASTRIC ULCER IN RATS

PRASANT KUMAR SABAT*

Department of Pharmaceutics, School of Pharmaceutical Sciences, Siksha 'O' Anusandhan (Deemed to be) University, Bhubaneswar, Odisha, India. Email: pksabat27@gmail.com

Received: 25 October 2019, Revised and Accepted: 30 December 2019

ABSTRACT

Objective: To evaluate the curative protects activity of electrohomeopathic drug Cancerous15 (C15) against Indomethacin (IND)-induced gastric ulcer in albino rats. None of the data have been reported on antiulcer activity of C15 drug. Hence, the present study focuses on the scientific investigation of antiulcer activity of C15 against Indomethacin-induced peptic ulceration of rat models.

Methods: A total number of 35 albino rats were divided into five groups equally. Pure water was given to Group 1 (normal). IND was given orally to Group 2 (ulcerated control). Cancerous15 third dilution was given to Group 3. IND was given to Group 4 and Group 5 animals, thereafter pretreatment with Esomeprazole (ESM) and C15-third dilution, respectively. The pretreatments were treated in each day's interval for 21 days before IND administration. There was provision of food and water throughout the experimental period. On the 23rd day, the stomachs of the sacrificed rats were removed, and (1) ulcer index, (2) percentage of ulcer inhibition, (3) gastric volume, (4) pH, (5) pepsin activity, (6) mucin content, (7) malondialdehyde (MDA) concentration, and (8) stearidonic acid activity were studied.

Results: The pre-treated animals with ESM and C15 shown as significantly decreases in ulcer index, gastric volume, pepsin activity and MDA concentration, and significant increase in the percentage ulcer inhibition, pH value, mucin content, and superoxide dismutase activity concentration in comparison to ulcer-induced rats.

Conclusion: The study shows the significant ulcer protective activity of the C15 drug against IND-induced peptic ulceration in rats.

Keywords: Electrohomeopathy, Cancerous 15, Ulceration, Spagyric-medicine.

 DOI: http://dx.doi.org/10.22159/ajpcr.2020.v13i2.36181

INTRODUCTION

Electrohomeopathy an alternate medical system is widely practiced in many countries by the practioners since 1865. All drugs are extracted from plants by cohobation method. An effort is made to prove the efficacy of one of the drug scientifically.

In view of the treatment of peptic ulcer in clinical practice, it is found that the herbal drugs and alternative medications are equally effective and even more reliable in comparison to proton-pump inhibitor and H2 blocker as the formers are less toxic, cheap, and not involving in any type of drug interaction. Electrohomeopathic drug Cancerous 15 (C15) belongs to the present category. Local elctrohomeopathy practitioners are widely using electrohomeopathic drug C15 in the treatment of peptic ulcer and become successful.

Electrohomeopathy could be a recent branch of medical system, projected by Dr. Count Ceasare Mattie of Italy in 1865, later, Krauss 1914; Glidden 1951; Whitmee 1956, and others enrich the data of this method of drugs and created it common.

C15 is an electrohomeopahic drug prepared by cohobation method from different parts of plant such as *Vincetoxicum officinale, Conium maculatum, Pimpinella saxifraga, Rhus toxicodendron, Marsdenia cundurango,* and *Strychnos nux-vomica*. Then the spagyric essences were mixed in a specified ratio. This medicine is used by local practitioners to cure many gastrointestinal diseases including peptic ulcer. The third dilution has been exceptionally used in rapid ulcer healing processes in the stomach. This study compared their therapeutic efficaciousness to a reference drug (esomeprazole [ESM]) on gastric ulceration in rats.

MATERIALS

Chemicals and drugs

Indomethacin (IND) and ESM were obtained from micro laboratories, India. Trichloroacetic acid, thiobarbituric acid, bovine serum albumin, dimethylaminobenzaldehyde, epinephrine, acetyl acetone, gallic acid, aluminum chloride, and quercetin were products of sigma chemical Co. Distilled water was collected in Pharmaceutics Laboratory, School of Pharmaceutical Sciences, Siksha "O" Anusandhan deemed to University, Bhubaneswar. Assay kits and other chemicals used were from analytical grade from reputable companies in India. The electrohomeopathy medicine C15 spagyric essence is collected from Kasturoba Electrohomeo foundation, Cuttack, Odisha.

Experimental animals

Albino rats of the Wistar strain were used for the study; the mean weight of rats is 180.00±1.85 g. Approval from the animal ethical committee was taken before the experimental work. (Notification no: 1171/Po/Re/S/08/CPCSEA).

METHODS

Preparation of C15-3rd dilution

The first dilution was prepared by mixing the pure spagyric essence with distilled water at 1:27 ratio followed with ten successions. The second dilution was prepared by mixing the first dilution with distilled water at 1:27 ratio followed with ten successions. The third dilution was prepared by mixing the second dilution with distilled water at 1:27 ratio followed with ten successions.

Table 1: Ulcer scores and descriptive remark

Score	0	1	2	3	4	5
Remark	Mucosa are nearly normal	Vascular congestions	Few lesions(1–2)	Lesions are severe	Lesions are very severe	Full of lesions in mucosa

Ulcer induction

The rats were administered with one oral dose of Indomethacin (30 mg/kg body weight) [1]. They were isolated from food, however, and allowed to take water for 24 h before ulcer induction. Varied degrees of ulceration have been observed after 24 h of IND administration.

Animal grouping and treatments

Thiry-five albino rats were divided into five groups of seven rats each. The group is done as follows [2].

- Group 1 - Normal, only pure water
- Group 2 - Control, IND (30 mg/kg body weight)
- Group 3 - Electrohomeopathic drug C15 – third dilution (Five drops 8 hourly) to monitor possible toxicological result of the medicine
- Group 4 - IND after pretreatment with ESM (20 mg/kg body weight)
- Group 5 - IND after pretreatment with C15 - 3rd dilution five drops 8 hourly.

Treatments with ESM and C15 lasted for 21 days before IND administration. ESM was orally administered once daily and C15-3rd dilution administered thrice daily using oral intubator. There was provision of food and water throughout the experimental period [3].

Isolation of stomach and collection of gastric juice

On the 23rd day (24 h post-lesion induction), the animals were humanely sacrificed by cervical dislocation. The abdomen was incised, and the stomach was opened along the greater curvature. The stomach content was collected into a centrifuge tube. Five milliliters of distilled water was added, and then the resultant resolution was centrifuged at 3000 rev for 10 min. The supernatant obtained was undergone for biochemical analyses. The stomachs were cleaned and preserved in 0.1 M phosphate saline buffer (1:4 (w/v), pH 7.4) then undergone for macroscopic examination.

Determination of gastric secretion parameters

Two milliliters of supernatant was collected, and gastric acid output (volume) was determined by titration with 0.0025N NaOH using Toepfer's chemical agent as indicator. The pH of digestive juice was determined using a pH meter. The pepsin activity and mucin concentration were determined with followed procedure [4,5].

Evaluation of ulceration

The degrees of ulceration within the IND-treated rats were evaluated with referring the procedure of Szabo and Hollander [6]. The stomachs were cleaned and fixed on a corkboard and ulcers were scored using dissecting microscope with square-grid lens supported grading on a 0–5 scale (depicting the severity of vascular congestions and lesions/hemorrhagic erosions) as given in Table 1. The mucosal damage areas were expressed as a percentage of the total surface area of the glandular stomach estimated in square millimeters. The mean ulceration score for every animal was expressed as an ulceration index, and also the percentage inhibition against ulceration was determined using the expression as follows [7].

$$\text{U.I.} = \frac{\text{Ulcerated area}}{\text{Total surface area}} \times 100$$

$$\text{Percentage of ulcer inhibition} = \frac{\text{U.I.in control} - \text{U.I.in text}}{\text{U.I.in control}} \times 100$$

Statistical analysis

Ulceration inhibition was expressed in percentage. All other results were expressed as a mean of seven determinations±standard error mean.

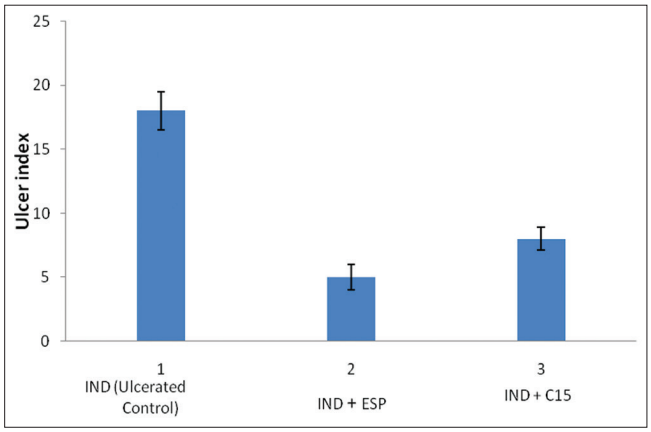

Fig. 1: Effect of Cancerous 15 on ulcer index of indomethacin ulcerated rates (n=7, X±standard error mean). Bars with different superscripts for the parameter are significantly different (p<0.05)

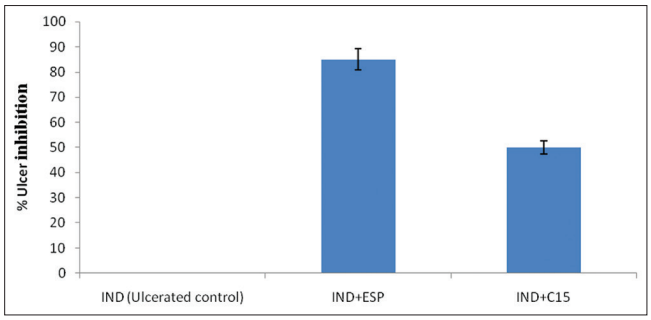

Fig. 2: Effect of Cancerous 15 on degree of protection against ulceration in indomethacin-induced rates (n=7, X±standard error mean). Bars represent the percentage degree of protection against ulceration

RESULTS

The several effects of C15 have been shown antiulcerative parameters include (i) the ulcer index, (ii) percentage of inhibition against lesions, (iii) decrease in gastric volume, (iv) increase in gastric pH, (v) decrease in pepsin activity, (vi) increase in mucin content, (vii) decreased gastric malondialdehyde (MDA) level, (viii) increased in superoxide dismutase (SOD) activity within the experimental animals depicted in Figs. 1-8, respectively. It was found that the Group 4 and Group 5 animals show a significant decrease in ulcer index, gastric volume, pepsin activity, and MDA concentration in comparison to Group 2 animals, and simultaneously, there is a significant increase in percentage ulcer inhibition, pH value, mucin content, and SOD activity concentration in compared to Group 2 animals.

DISCUSSION

The active constituent of the herbs present in C-15 drug is capable to accelerate the life force of the body, and the antioxidant property of the herbs tries to manage the toxicity-related disorders of IND, and thereby ulcer healing is achieved. This is confirmed from the comparative study between different groups of animals used in experiment.

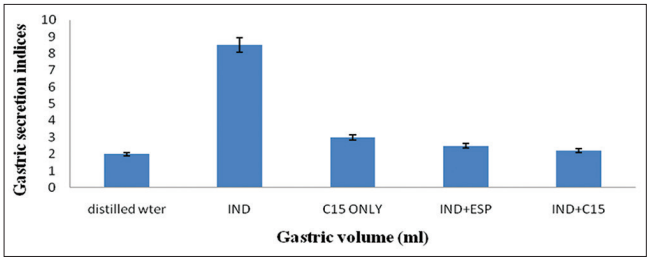

Fig. 3: Effect of Cancerous 15-3rd dilution on gastric secretion of indomethacin-induced rates. (n=7, X±standard error mean). Bars with different superscripts for each parameter are significantly different (p<0.05)

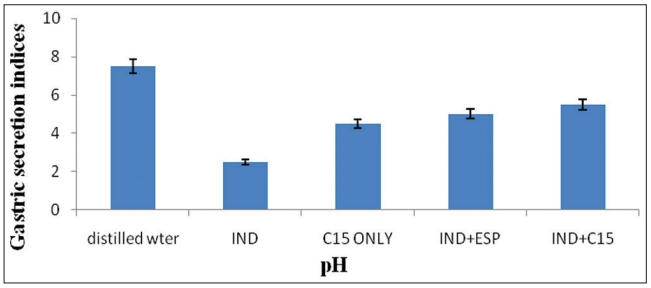

Fig. 4: Effect of Cancerous 15-3rd dilution on pH of gastric secretion of indomethacin ulcerated rats. (n=7, X±standard error mean). Bars with different superscripts for each parameter are significantly different (p<0.05)

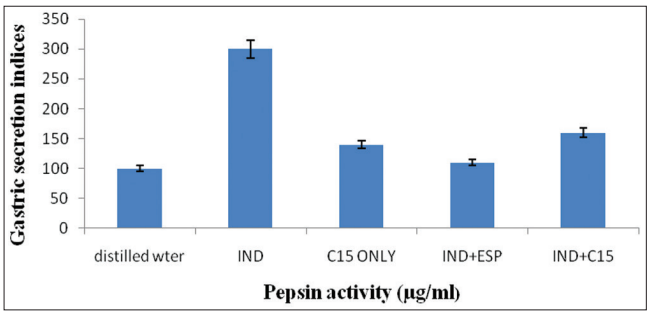

Fig. 5: Effect of Cancerous 15-3rd dilution on decrease in pepsin activity of indomethacin ulcerated rats. (n=7, X±standard error mean). Bars with different superscripts for each parameter are significantly different (p<0.05)

Prostaglandin synthesis is inhibited by the use of IND and free radical formation leads to the development of stomach ulcer which is a biochemical and pathological process [8-10]. As the synthetic drugs are comparatively costly and having numerous side effects, a natural product of plant source may be replaced due to its low cost, nontoxic nature for the treatment of stomach ulcer [11]. The active phytoconstituents present in electrohomeopathic drug C-15 drug are capable to accelerate the life force of the body, and the antioxidant property of constituent tries to manage their toxic-related disorders.

Biochemical analysis and tissue layer integrity for stomach were used to determine the pharmacological effect of the test, standard, and controlling agents [12]. The pH value gave a data about the acidity level of gastric secretion. The low pH value indicated to decrease the hydrogen concentration in gastric juice. This result related to pathogenesis of peptic ulcer and gastric mucosal damage in experimental animals [12-14], where IND was reported to have caused ulceration of rats [9] and it also attributed gastrointestinal injury to eroded mucin content. This study shows about the increase in ulcer index and gastric volume after oral administration of IND either due

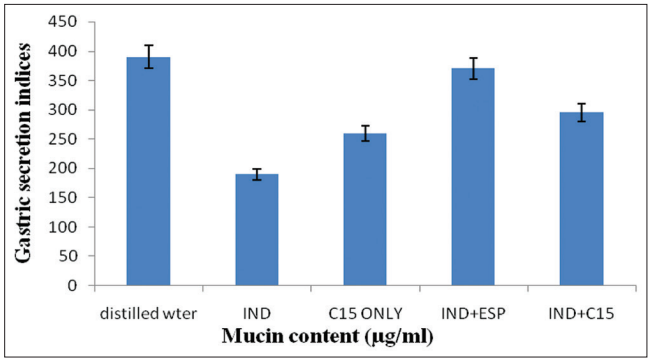

Fig. 6: Effect of Cancerous 15-3rd dilution on increase in mucin content of indomethacin ulcerated rats. (n=7, X±standard error mean). Bars with different superscripts for each parameter are significantly different (p<0.05)

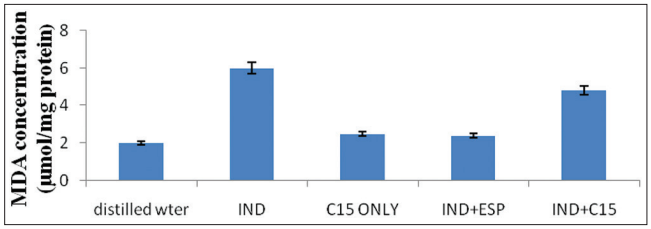

Fig. 7: Effect of Cancerous 15-3rd dilution on decreased gastric malondialdehyde level of indomethacin ulcerated rats. (n=7, X±standard error mean). Bars with different superscripts for each parameter are significantly different (p<0.05)

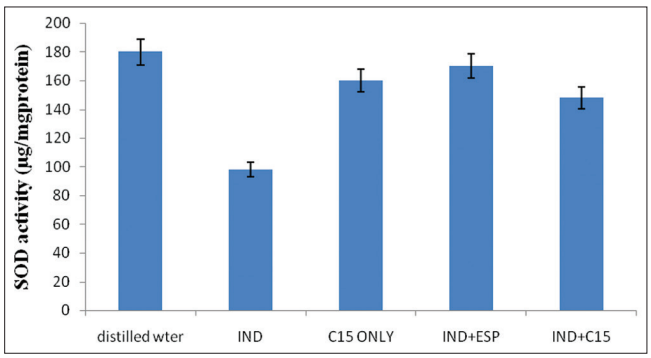

Fig. 8: Effect of Cancerous 15 3rd dilution on the increased in superoxide dismutase activity of gastric mucosal of indomethacin-induced ulcerated rats. Bars with different superscripts for each parameter are significantly different (p<0.05)

to inhibition of prostaglandin synthesis or due to formation of free radicals. Decreased prostaglandin level affected the gastroprotection and increase gastric acid secretion which is responsible for ulcer formation [15,16]. Conversely, pretreatments with C15-3rd dilution considerably reduced these parameters. A series of incidents such as the release of preformed mucus, wound retraction, and reepithelialization is associated in ulcer healing process after toxicological injury [16]. The decreased mucin secretion and increased pepsin activity retard the protective ability of the epithelial membrane against erosion, and thus the mucosal tissue is damaged. The electrohomeopathy drug C-15 was protected the mucosal layer and retarded the ulcer's progress and thereby the drug assisted in ulcer healing process in association with decreased pepsin activity and increased mucin level in gastric mucosa. This successively accelerated the ulcer healing process in the stomach of IND-induced ulcerated rates. Mucosal epithelial cell healing

was prominently exhibited by C-15 3rd dilution 5 drop dose depicting a better ulcer healing capacity and compared to reference drug ESM.

CONCLUSION

In the present study, the finding suggests that C15-3rd dilution possesses excellent gastro protective ability. Thus, it justifies the use of C15 third dilution by local electrohomeopathy practitioners in the treatment of peptic ulcer disease. Further, it was found that there was no remarkable difference in the efficacy of the electrohomeopathic C15 drug in comparison to the efficacy of standard ESM. Efforts are ongoing to investigate the exact antiulcerogenic principle of C-15 3rd dilution and also harness their possible synergistic efficacy against gastric ulcer.

AUTHORS CONTRIBUTION

Experimentally designed the whole manuscript and the experimental work done by the author (Prasant Kumar Sabat).

CONFLICTS OF INTEREST

Nil.

AUTHORS FUNDING

Nil.

REFERENCES

1. Bhattacharya S, Chaudhuri SR, Chattopadhyay S, Bandyopadhyay SK. Healing properties of some Indian medicinal plants against indomethacin-induced gastric ulceration of rats. J Clin Biochem Nutr 2007;41:106-14.
2. Mishra S, Balaji O, Rao V, Adiga S. Gastroprotective activity of sesame (*Sesamum indicum*) seeds extract in alendronate-induced gastric ulcer in rats. Asian J Pharm Clin Res 2019;2:214-7.
3. Pandey D, Joshi A, Hemalata S. Anti ulcer study of standardized ethanolic root extract of *Aganosma dichotoma* and isolated urosuric acid. Int J Pharm Pharm Sci 2017;9:172-80.
4. Sanyal AR, Denath OK, Bhattacharya SK, Gode KD. The effect of cyproheptadine on gastric acidity. In: Pfeiffer CJ, editor. Peptic Ulcer. Munksgoard: Scandinavian University Books; 1971. p. 312-8.
5. Corne SJ, Morrissey SM, Woods RJ. Proceedings: A method for the quantitative estimation of gastric barrier mucus. J Physiol 1974;242:116-7.
6. Szabo S, Hollander D. Pathways of gastrointestinal protection and repair: Mechanisms of action of sucralfate. Am J Med 1989;86: 23-31.
7. Sayed DA, Fahmi SR, Soliman AM, Hussin NS. Antiulcerogenic efficacy of ethanolic extract of *Vitis vinifera* leaves in rats. Int J Pharm Pharm Sci 2016;8:63-172.
8. Lichtenberger LM. The hydrophobic barrier properties of gastrointestinal mucus. Annu Rev Physiol 2005;17:178-88.
9. Inas ZA, Abdallah-Hala AH, Khattab H, Gehan HH. Gastroprotective effect of Cordia myxa L. fruit extract against indomethacin-induced gastric ulceration in rats. Life Sci J 2011;8:433-45.
10. Ajani EO, Sabiu S, Bamisaye FA, Adenigba BV, Awomoyi DD, Adeyanju MN. Hepatoprotective and antioxidative effect of ethanolic leaf extract of Langenaria breviflora (bitter gourd) on indomethacin-ulcerated rats. J Pharm Biol Sci 2014;9:61-8.
11. Raji Y, Oyeyemi WA, Shittu ST, Bolarinwa AF. Gastro-protective effect of methanol extract of *Ficus asperifolia* bark on indomethacin-induced gastric ulcer in rats. Niger J Physiol Sci 2011;26:43-8.
12. Adhikary B, Yadav SK, Roy K, Bandyopadhyay SK, Chattopadhyay S. Black tea and theaflavins assist healing of indomethacin-induced gastric ulceration in mice by antioxidative action. Evid Based Complement Alternat Med 2011;2011:546560.
13. Lüllmann H, Mohr K, Ziegler A, Bieger D. Color Atlas of Pharmacology. 2nd ed. New York: Thieme Stuttgart; 2000. p. 166.
14. Beck PL, Xavier R, Lu N, Nanda NN, Dinauer M, Podolsky DK, *et al*. Mechanisms of NSAID-induced gastrointestinal injury defined using mutant mice. Gastroenterology 2000;119:699-705.
15. Muhammed AV, Thamotharan G, Sengottuvelu S, Haja-Sherief S, Sivakumar T. Evaluation of antiulcer activity of Ficus pumila L. leaf extract in albino rats. Glob J Res Med Plants Indig Med 2012;1:340-51.
16. Naito Y, Yoshikawa T, Matsuyama K, Yagi N, Arai M, Nakamura Y, *et al*. Effects of oxygen radical scavengers on the quality of gastric ulcer healing in rats. J Clin Gastroenterol 1995;21 Suppl 1:S82-6.