Short Communication

Anti-ulcer activity of Lucer against experimentally induced gastric ulcers in rats

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Abstract

The present study is designed to explore the mechanism of action of herbal formulation Lucer against experimentally induced gastric ulcers. The aqueous extract (120 and 180 mg/kg) of Lucer was tested against aspirin and ethanol-induced gastric ulcer model in rats. The drug has been found to be very effective in inhibiting gastric ulceration. This is evident from reduction in ulcer index parameters. Besides, significant reduction in acid secretory parameters such as total acidity, total acid output and volume of gastric secretion were also observed. It is concluded from this study that the drug possesses anti-ulcer activity in both the models. The anti-ulcer activity of the drug can be attributed to inhibition of acid secretory parameters and strengthening of gastric mucosal barrier.

Key words: Anti-ulcer, aspirin-induced ulcers, cyto-protection, gastric ulcers, herbal drugs

Introduction

Peptic ulceration is one of the common disease affecting millions of people. It is now considered to be one of the modern age epidemics affecting nearly 10% of world population.[1] Research advances during last decade have offered new insights in the therapy and prevention of peptic ulceration. Although drug treatment for peptic ulceration has improved in the recent past, the need for better therapy is still prevailing. Drugs are found by screening compounds against an animal model of human disease. Plants provide an alternative strategy in search for new drugs. There is a rich abundance of plants reputed in traditional medicine to possess anti-ulcer properties.[2] It is likely that plants will continue to be a valuable source of new molecules which may, after possible chemical manipulation, provide new and improved anti-ulcer drugs.

Researchers[3] has reported anti-ulcer activity of a number of herbal extracts such as triterpenoid glycyrrhizin acid from Glycyrrhiza glabra, a diterpenoid nimbidin from Neem, tannins from Cinnamomum cassia and Emblica officinalis, etc. The oxygen-derived free radicals are directly implicated in ulcerogenesis and use of antioxidants may lead to gastro protective effects.[4]

In the light of various reports of herbal drugs and preliminary findings of our study, it was considered worthwhile to evaluate the effects of the lucer against experimentally induced gastric ulcers and elucidate its possible mechanism of action.

Materials and Methods

Marketed herbal formulation named Lucer (Tonix Health Care Pvt. Ltd., Batch No. 40901, Date of Mfg.: Sept 2004) contains Pravala Pishti (60 mg), Kamadudha Rasa (50 mg), Sutashekhara Rasa (40 mg), Amalaki ext. (40 mg), Godanti Bhasma (30 mg), Jatamansi (30 mg), Muktashukti Pishti (30 mg), Svarnamakshika Bhasma (30 mg), Shankha Bhasma (30 mg), Guduchi Satva (20 mg), Kiratatikta ext. (20 mg), Jyotishmati Beeja (20 mg), Parsika Yavani (10 mg), Vacha (10 mg). Albino rats of either sex weighing between 200 and 300 g were used. Aspirin was given in a dose of 500 mg/kg, once a day orally. From the results of preliminary studies, the drug Lucer was administered at a single dose of 180 mg/kg for 6 days orally, and 120 mg/kg for 3 days twice a day orally to study the anti-ulcer effects.[5] A single dose of Cimetidine (50 mg/kg) has been administered as a standard control. Animals were fed with standard chow diet and were divided into groups of six each. Fasted animals were used as

Table 1: Effect of lucer against aspirin-induced gastric ulcers

| Treatment    | Dose, p.o. (mg/kg) | Ulcer index |
|--------------|-------------------|-------------|
| Aspirin (control) | 500 Single dose | 3.2±0.0003  |
| Cimetidine   | 50 Single dose   | 0.24±0.0300 *|
| Lucer        | 120 b.i.d        | 0.0055±0.0017 *|
| Lucer        | 180 Single dose  | 0.0499±0.0409 *|

n= 6 in each group, * P<0.05 compared with control group. All values represented mean±SEM
The gastro protective effects of Lucer were investigated against aspirin- and ethanol-induced gastric ulcer model in rats. It has shown significant gastro protective effects against these models. The aqueous extract of Lucer has shown significant reduction in the ulcer index as compared to control group in aspirin-induced gastric ulcer model in both the doses. 120 mg/kg of the drug has also significantly decreased ulcer index as compared to control group in ethanol-induced gastric ulcer model. Further the acid secretory parameters like total acidity, volume of gastric acid secretion and total acid output were also studied in aspirin-induced gastric ulcer model. Significant reduction was observed in total acid output and volume of gastric acid secretion although total acidity was observed to be reduced insignificantly against aspirin-induced gastric ulcer model as compared to control group [Table 1-3].

**Conclusion**

It is suggested that anti-ulcer activity of Lucer in aspirin-induced gastric ulcer model is likely to be associated with both inhibition of acid secretory parameters and strengthening of gastric mucosal barrier. This is under investigation for its alteration of mucosal resistance.

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इतिहास सारांश
प्रायोगिक आमाशय ब्रन में औषध योग Lucer की ब्रनप्रतिरोधी कार्मिकता का अध्ययन

जिज्ञा एस. शाह, जेतुन आर. पटेल

प्रस्तुत शोधकार्य प्रायोगिक रूप से प्रेरित आमाशय ब्रन में आयुर्वेदिक औषध योग Lucer के प्रभाव की कार्मिकता का अध्ययन करने हेतु किया गया। लुसर का जलीय सार चूहों में एस्पिरिन और एथेनॉल प्रेरित गेस्ट्रिक अल्सर द्वारा परखा गया। औषध का जलीय सार (120 और 180 मि.प्रा./कि.प्रा.) चूहों को मुख मार्ग से उपरोक्त मॉडल्स में दिया गया। औषध योग, एस्पिरिन और एथेनॉल प्रेरित gastric ulceration रोकने में काफी प्रभावी है, अल्सर इंडेक्स के मापदंडों में कमी से यह स्पष्ट होता है। इसके अलावा एसिड सिक्रिटरी मापदंड जैसे कि टोटल एसिस्टेंट, टोटल एसिड आउटपुट और बोल्युम ऑफ गेस्ट्रिक सिक्रिशन में भी कमी देखी गयी। इस अध्ययन से यह निष्कर्ष निकलता है कि यह औषध योग दोनों मॉडल्स में एंटीअल्सर एक्टिविटी दिखाता है। औषध योग की एंटीअल्सर एक्टिविटी हेतु एसिड सिक्रिटरी मापदंड और गेस्ट्रिक म्युकॉलस बैरियर की दृंढता को उत्तरदायी माना जाता है।