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EVALUVATION OF GASTROPROTECTIVE ACTIVITY OF URARIA PICTA ROOT EXTRACT ON EXPERIMENTAL ANIMALS

Asif Ali*, Prof. Praveen Kumar, Dr. Shamim Ahmad, Dr. Nasiruddin Ahmad Farooqui and Jiyaul Hak

Translam Institute of Pharmaceutical Education and Research Meerut, U.P.

***Corresponding Author: Asif Ali**

Translam Institute of Pharmaceutical Education and Research Meerut, U.P.

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ABSTRACT

In the present study, we examined the gastro protective effect of uraria picta root extract against ethanol-induced gastric mucosal lesions in rats. The gastric mucosal lesions were produced by oral administration with various concentrations of ethanol for three days, and 75% ethanol treatment was determined to be the optimal condition for induction of gastric damage. To identify the protective effect of uraria picta root extract on ethanol-induced gastric damage, various doses of uraria picta root extract were given as pretreatment for three days, and then gastric damage was induced by 75% ethanol treatment. Selenium showed a protective effect against ethanol-induced gastric mucosal lesions in a dose dependent manner. Specifically, 300 mg/kg of uraria picta root extract showed the highest level of gastro protection. In addition, uraria picta root extract markedly attenuated ethanol-induced gastric ulcer index in gastric mucosa, volume of gastric juice, pH of gastric juice, free acidity in gastric juice, total acidity, pepsin content and DNA content. Histological data showed that 300 mg/kg uraria picta root extract distinctly reduced the depth and severity of the ethanol induced gastric lesion. These results clearly demonstrate that uraria picta root extract inhibits the formation of ethanol-induced gastric mucosal lesions.

INTRODUCTION

Plants that are widely used in traditional medicine for human welfare and veterinary medicine are known as medicinal plants (Wickens, 2001). Medicinal plants play an important role in maintaining the health of people around the world. In fact, they are very important in poor communities. Medicinal plants not only have an important economic role, but also an important cultural role. Knowledge of their use is widespread and their effectiveness is based on a long history of use (Chopra et al., 1956). India has one of the oldest, richest and most diverse cultures known as "folk traditions" related to the use of medicinal plants that are still alive in India (Trivedi and Sharma, 2011).

The digestive system is the most important system of the human body. It consists of a hollow tube and several associated organs that help it function. The work of the digestive system is to digest the food eaten, absorb their vital ingredients and remove unknown waste from the body. It resists the substance. The ability of the gastrointestinal tract to resist harmful agents depends on several important protective factors.

MATERIAL AND METHOD

Chemicals

All chemicals were of analytical grade and all chemical were gifted from akums drug and pharmaceutical.

Plant material

Preparation of the plant material

The plant material is collected from botanical garden of our college. With the help of a botanist, it was identified as Uraria picta root the plants material (drug sample) was authentication from CH. CHARAN SINGH UNIVERSITY MEERUT by Prof. Vijai Malik. It was identified as Uraria picta root Sample is been preserved and documented in the herbarium. Small pieces of plant root were washed. Then it will be dried in room temperature. By the use of electric mixer these roots are converted into the powder form. Experiment is carryout to study the effects of ethanolic roots extract of Uraria picta. Around 60g of powder is been weighed and soaked into 600ml of 90% ethanol solution at room temperature. For occasionally shaking this preparation is leave for overnight. Whatman filter paper is use for filtration of extraction. By using Soxhlet evaporation method for the filtration and it should be done until drying and dried to obtain 5g of dried extract.

Animals

Male albino Wistar rats weighing between 250 and 300 g, were used in this study. They were initially housed in groups in cages and had free access to water and food ad libitum for a week. In all studies, the animals were fasted for 18-20 h with free access to water until 60 min before the start of the experiment. During the fasting period, the

animals were placed individually in cages with wide-mesh wire bottoms to prevent coprophagy.

METHODS

Extraction and fractionation

The extraction procedure was conducted as described by Markham (1982) with slight modification. The dried powder of uraria picta root and berries was extracted with methanol (85%) at room temperature for 3 days. The resulting suspension was then filtered and concentrated by evaporation at 50^0 C and fractioned by successive washing with different solvents of increasing polarity (hexane, chloroform and ethyl acetate). Each fraction was evaporated to dryness to obtain the following fractions: methanol extract (ME), hexane extract (HE), chloroform extract (CHE), ethyl acetate extract (EAE) and the remaining aqueous extract (AqE). The extracts were stored at 4 °C until use.

Acute Toxicity study

Research has been done to investigate the toxic effects of the release. Guidelines for the Organization for Cooperation and Development (OECD) no. According to 425 the study was conducted. Mice are used intended for this resolution. Animals not eat overnight, single water is assumed, later that the discharge was controlled with a gauge with a body weight of 2000 mg / kg in appropriate groups and groups were given continuously 24 h for behavioral, neurological and anatomical side view and 24 h for some a bad situation. 72 h. Animals were tested for toxicity for fourteen days. On the bases of guidelines, if death was detected in two or three animals, the dosage to be given is determined as a poisonous dosage. When death is detected in an mice, the similar dosage is frequent to check the toxicity. Ifs death is not detected at wholly; shrub extraction was well thought-out nontoxic. Otherwise, the poisonousness examination can be in progress through 100mg / kg body weight and repeated in other doses such as 250, 500, 1000, 2000 mg / kg body mass.

Histological Studies

Rat pancreases were dipped into the Bouin-Hollande sublimate solution around 20 to 24 hours. These were standardized in various fixatives. These are the preservative, fixative test comparisons. Pancreas was embedded by Paraffin at 5 to 6 µ. It was mounted on albumin coated glass slides. Every second slide was used for staining. Staining techniques, Chromalum-Hematoxylin and Phloxin (CHP) method shows the best result in between islets and the adjoining exocrine pancreas. These were also use for the differentiated b/w two types of cells within islets of pancreas. In CHP staining method, alcohol is use for the hydration which is been treated with $KMnO_4$ solution. It is been decolourised by sodium bisulphite solution. It will be stained with haematoxylin for 15 minutes. Counter stained in phloxin for few minutes then mordent in phosphotungstic acid, differentiated in 95% alcohol, dehydrated and mounted with DPX. This was observed in the whole pancreases at regular interval of time.

RESULTS AND DISCUSSION

Table no. 3.1: effect of uraria picta Root extract on gastric ulcer index in rat.

Groups	Treatment	Dose mg/kg	Ulcer index	Percentage protection
Group-I	Control group	Saline	22.44	----------
Group-II	Cimetidine	10	13.5	42.8%
Group-III	Uraria picta extract	50	18.83	17.5%
Group-IV	Uraria picta extract	150	14.45	38.8%
Group-V	Uraria picta extract	300	12.45	42.6%

Values are mean ± SEM of 6 rats in each group a=P<0.05 when compared to control grou

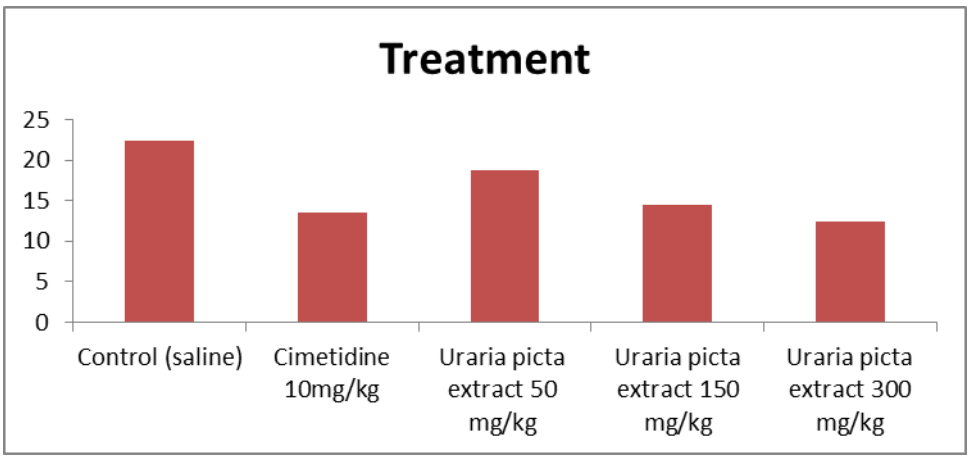

Fig. no. 3.1: Effect of uraria picta root extract on gastric ulcer index in rat.

Table no. 3.2: Effect of uraria picta root extract on volume of gastric juice in rat.

Groups	Treatment	Dose mg/kg	Volume of gastric juice
Group-I	Control group	saline	3.88±0.03
Group-II	Cimetidine	10	1.66±0.4
Group-III	Uraria picta extract	50	3.56±0.7
Group-IV	Uraria picta extract	150	1.89±0.9
Group-V	Uraria picta extract	300	1.50±0.6

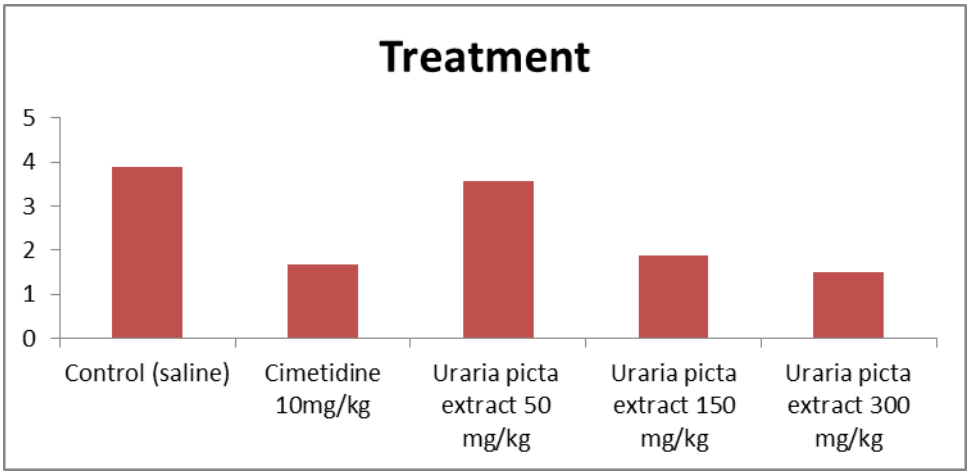

Fig. no. 2.2: Effect of uraria picta root extract on volume of gastric juice in rat.

Tablet no. 3.3: Effect of uraria picta root extract on pH of gastric juice in rat.

Groups	Treatment	Dose mg/kg	pH mean ±SEM
Group-I	Control group	saline	1.86±0.04
Group-II	Cimetidine	10	2.56±0.4
Group-III	Uraria picta extract	50	1.88±0.7
Group-IV	Uraria picta extract	150	2.55±0.9
Group-V	Uraria picta extract	300	2.88±0.7

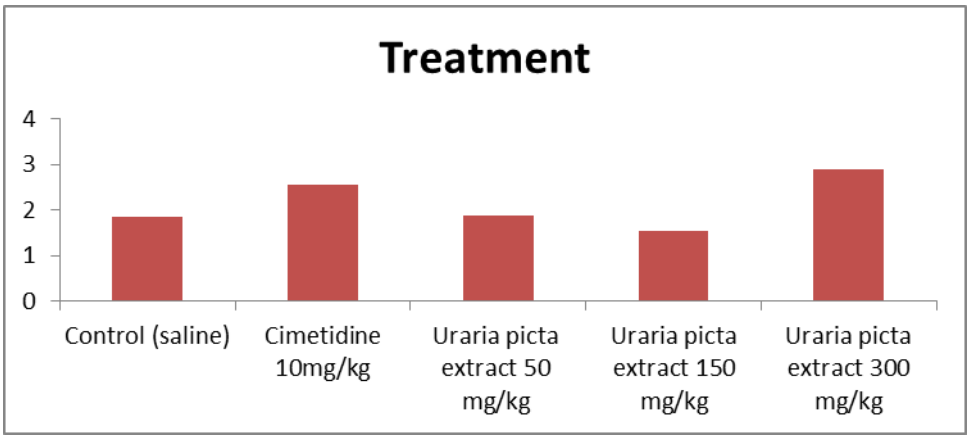

Fig. no.3.3: Effect of uraria picta root extract on pH of gastric juice in rat.

Table no. 3.4: Effect of uraria picta root extract on free acidity in in gastric juice in rat.

Groups	Treatment	Dose mg/kg	Free acidity Meq/I
Group-I	Control group	saline	61.88±1.4
Group-II	Cimetidine	10	43.76±1.06
Group-III	Uraria picta extract	50	57.89±1.7
Group-IV	Uraria picta extract	150	45.23±1.8
Group-V	Uraria picta extract	300	42.18±1.88

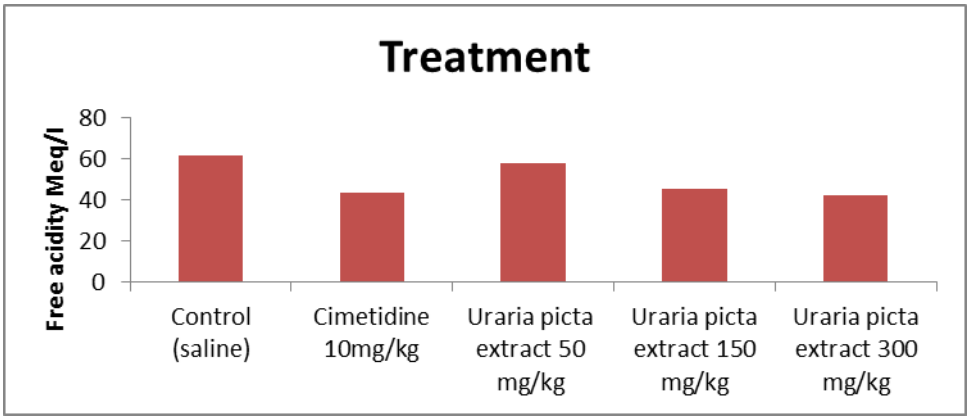

Fig no. 3.4: Effect of uraria picta root extract on free acidity in the gastric juice in rat.

Tablet no. 3.5: Effect of uraria picta root extract on total acidity in gastric juice in rat

Groups	Treatment	Dose mg/kg	Total acidity Meq/I
Group-I	Control group	saline	92.17±1.7
Group-II	Cimetidine	10	71.36±1.14
Group-III	Uraria picta extract	50	87.13±1.98
Group-IV	Uraria picta extract	150	73.14.±2.03
Group-V	Uraria picta extract	300	64.23±1.99

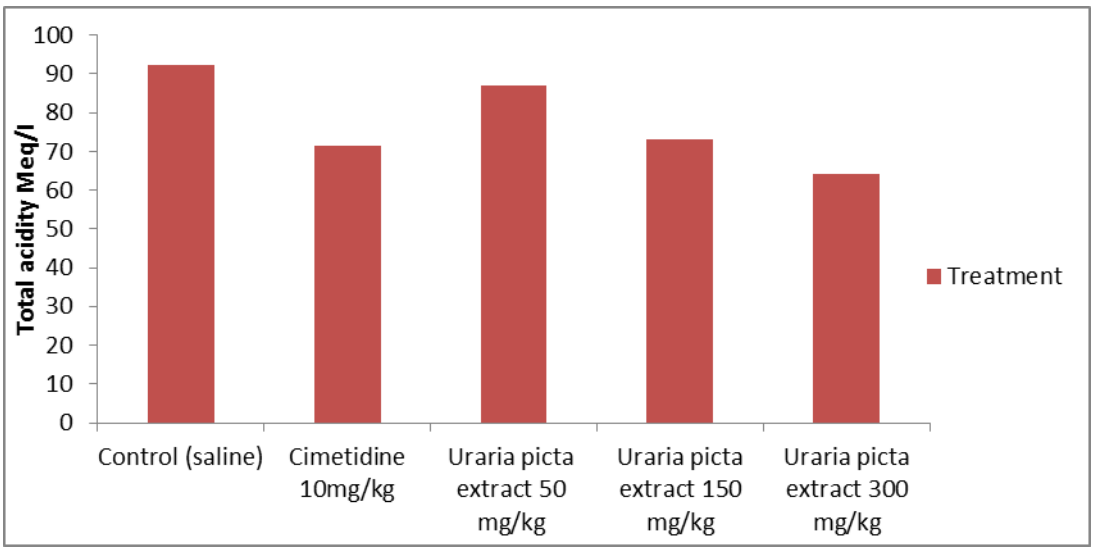

Fig. no. 3.5: Effect of uraria picta root extract on total acidity in gastric juice in rat.

Table no. 3.6: Effect of uraria picta root extract on pepsin content in gastric juice in rat.

Groups	Treatment	Dose mg/kg	Pepsin content (µ mol/ml
Group-I	Control group	saline	92.17±1.7
Group-II	Cimetidine	10	71.36±1.14
Group-III	Uraria picta extract	50	87.13±1.98
Group-IV	Uraria picta extract	150	73.14.±2.03
Group-V	Uraria picta extract	300	64.23±1.99

Values are mean ± SEM of 6 rats in each group
a=P<0.05 when compared to control group

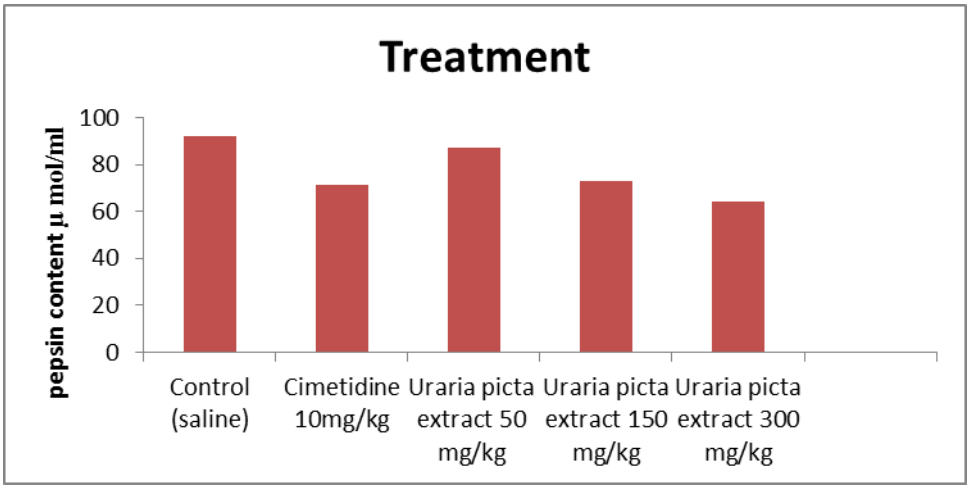

Fig no. 3.6: Effect of uraria picta root extract on pepsin content in gastric juice in rat.

Table no. 3.7: Effect of uraria picta root extract on DNA content in gastric juice in rat.

Groups	Treatment	Dose mg/kg	Pepsin content (µ mol/ml
Group-I	Control group	saline	92.17±1.7
Group-II	Cimetidine	10	71.36±1.14
Group-III	Uraria picta extract	50	87.13±1.98
Group-IV	Uraria picta extract	150	73.14.±2.03
Group-V	Uraria picta extract	300	64.23±1.99

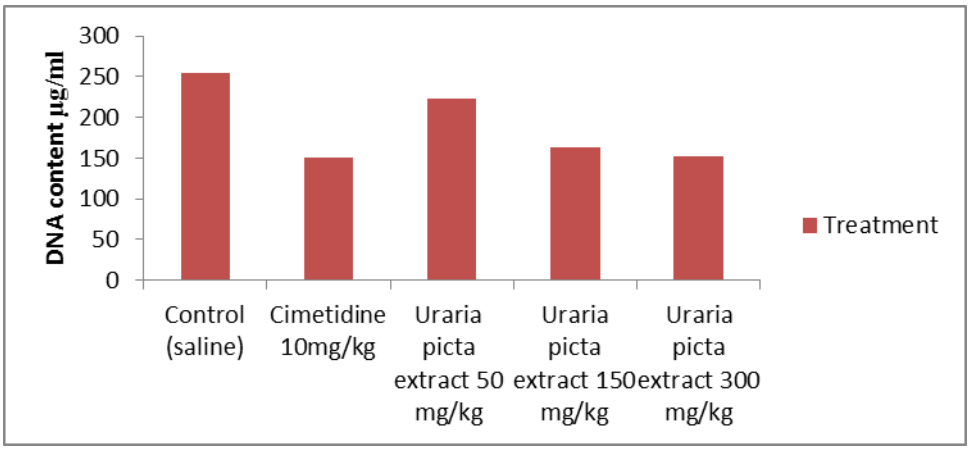

Fig. no. 3.7: Effect of uraria picta root extract on DNA content in gastric juice in rat.

CONCLUSION

Ulceration is now seen as an interactive process resulting from disruption of the gastrointestinal mucosal barrier due to an imbalance between the aggressive acidic pepsin and protective mucosal factors. Regarding the multifactorial cause of mucosal damage, there is now evidence that challenge with many agents, such as ethanol, acids, alkalis, bile acids, and nonsteroidal anti-inflammatory drugs, increases resistance to gastric mucosal damage. The aim of this study was to describe the anti-secretory and gastrointestinal protective effects of Uralia picta root extract in Wistar albino Rattus norvegicus rats using the following standard wound model. After a period of drug administration, it was studied in the validated gastric ulcer model described above. Therefore, the present study was conducted to investigate the adaptive cell protection of Uralia picta root extract against mucosal invasive acidic pepsin and protective mucin secretion, mucosal cell shedding, glycoprotein levels, and antioxidant activity. Uralia picta root extract 50 mg/kg and 150 and 300 mg/kg body weight were divided into treatment groups in the above model in laboratory mice. Each group had 6 mice for wound induction in the 4-hour pyloric ligation model.

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