INTRODUCTION

The exact pathogenesis of ulcer continues to elude scientists and medical researchers, but a common ground has been proposed. Ulcers are produced when any factor causes an imbalance between the protective factors (mucus and bicarbonate) and aggressive factors (acid and pepsin) in the stomach! Such factors could range from natural causes (gastric cancer), infections (H. pylori), lifestyle (drugs - non steroidal anti-inflammatory agents, alcohol, stress and cigarette smoking) 4-7. Current treatment of ulcers in developing countries has been largely suppression of pain, with little or no strategy aimed at a cure. Herbal medicine is fast emerging as an alternative treatment to available synthetic drugs for treatment of ulcer possibly due to lower costs, availability, fewer adverse effects and perceived effectiveness. Many tropical herbs have been scientifically reported to possess potent antiulcer activity 4,5,6,7 so the present study has been focused on anti ulcer activity. Tecomaria capensis (family:Bignoniaceae) also known as Cape-honeysuckle is a fast growing, scrambling shrub which may grow up to 2-3m high and spread more than 2.5m. Tecomaria capensis is an evergreen plant in warm climate areas but loses its leaves in colder areas. It has flowering time for this shrub is very erratic and often it flowers all year round. Flowers are orange in color. Plant is used as a traditional medicine to relieve pain and sleeplessness. Dried powdered bark infusions are taken for sleeplessness 8, reported to induce sleep  9. It is included in the list of African plants evaluated for in vitro antiplasmoidal activity 10.

MATERIALS AND METHODS

Plant materials and Preparation of Extracts:

The leaves of Tecomaria capensis were collected from Guntur, Andhra Pradesh. It was authenticated by professor Dr.S.M.Khasim, Department of Botany and Microbiology, Acharya Nagarjuna University, Nagarjuna nagar, Guntur. The leaf part of Tecomaria capensis was dried at room temperature and grounded into powder and passed through 500 mesh. The powder (500g) was extracted successively in soxhlet by ethanol and ethyl acetate. The sediments were filtered and the filtrate was dried at 40°C in an oven to get dried product. The different fractions obtained were used for further study.

Phytochemical screening

The ethanolic extract and ethyl acetate extract was tested for the presence or absence of secondary metabolites using standard phytochemical procedures and tests 11.

Acute oral toxicity study and selection of doses

A safe oral dose of TC was determined through the acute oral toxic test in rats as described by the Organization of Economic Co-

ABSTRACT

Tecomaria capensis is being used as a traditional medicine for the treatment of various diseases. Considering the above claims, the present work was undertaken to validate the anti-ulcer potential of the ethanolic and ethylacetate extracts leaves of Tecomaria capensis against in vivo Aspirin induced method. The extracts (100 and 200 mg/kg) significantly reduced the ulcer index. The extracts also significantly increased the pH of gastric acid while at the same time reduced the volume of gastric juice and total acidities. In conclusion, the present study provide preliminary data on the antiulcer potential of Tecomaria capensis leaves and support the traditional uses of the plant for the treatment of gastric ulcer.

Keywords: Anti-ulcer activity, Tecomaria capensis.
thick sections were cut using a rotary microtome. These sections were stained with hematoxylin and eosin using routine procedures. The slides were examined microscopically for Pathomorphological changes such as congestion, haemorrhage, oedema and erosions using an arbitrary scale for the assessment of severity of these changes.

RESULT

Acute toxicity studies were carried out on TC upto the dose of 2000 mg/kg which demonstrated that the extract did not show any sign of toxicity and mortality. However, there was a decrease in physical activity, which was observed only at the dose of 2000 mg/kg. Thus, the present doses regime (100 and 200 mg/kg) was chosen for further studies. The results of anti ulcer activities of crude ethyl acetate and ethanolic extracts of this plant at a dose of 100 mg/kg and 200mg/kg on rats intoxicated with Aspirin were illustrated in the table 1, fig-1 and 2. The tables also showed the comparison of effects among the untreated (control) and Aspirin treated (negative control) group with the drug treated group of rats. The results were represented as Mean ± Standard Error of Mean (M±SEM). Aspirin (G2) group significantly increased ulcer index (0.17±0.17), Gastric juice (0.25±0.171), pH (3.54±0.167), Total Acidity (50±0.86).
Table 1: Effects of ethyl acetate and ethanolic extracts of *Tecomaria capensis*

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Negative control</th>
<th>Positive Control</th>
<th>Ethyl Acetate Low Dose</th>
<th>Ethyl Acetate High Dose</th>
<th>Ethanol Low Dose</th>
<th>Ethanol High Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulcer index</td>
<td>0.17±0.17</td>
<td>11.17±0.31*</td>
<td>3.33±0.21*</td>
<td>11±0.37*</td>
<td>7.5±0.22*</td>
<td>6±0.26*</td>
<td>2.5±0.22*</td>
</tr>
<tr>
<td>Gastric juice</td>
<td>0.25±0.17</td>
<td>0.8±0.026**</td>
<td>0.4±0.052</td>
<td>0.7±0.037***</td>
<td>0.6±0.037***</td>
<td>0.5±0.026</td>
<td>0.4±0.037</td>
</tr>
<tr>
<td>pH</td>
<td>3.5±0.167</td>
<td>2.014±0.110*</td>
<td>4.48±0.199**</td>
<td>3.5±0.335</td>
<td>3.85±0.325</td>
<td>3.6±0.342</td>
<td>4.1±0.221***</td>
</tr>
<tr>
<td>Total acidity</td>
<td>50±0.86</td>
<td>102.8±1.70*</td>
<td>55.17±1.19**</td>
<td>72±1.83*</td>
<td>66±0.58*</td>
<td>60±1.88**</td>
<td>54±0.58**</td>
</tr>
<tr>
<td>% Protection</td>
<td>100.00%</td>
<td>35.29%</td>
<td>81.00%</td>
<td>36.29%</td>
<td>56.00%</td>
<td>65.70%</td>
<td>86.29%</td>
</tr>
</tbody>
</table>

**Treatment Groups**

Positive control (Ranitidine) Groups (G3) There was significant decrease in ulcer index (3.33±0.21), accompanied by significant decrease in level of Gastric Juice (0.4±0.052), Total Acidity (55.17±1.19) and also significant increase in pH (4.48±0.199) as compared to the negative control. Ethyl acetate low dose Groups (G4) There was significant decrease in ulcer index (11±0.37), accompanied by significant decrease in level of Gastric Juice (0.7±0.037), Total Acidity (72±1.83) and also significant increase in pH (3.5±0.335) as compared to the negative control. Ethyl acetate high dose (G5) There was significant decrease in ulcer index (7.5±0.22), accompanied by significant decrease in level of Gastric Juice (0.6±0.037), Total Acidity (66±0.58) and also significant increase in pH (4.1±0.221) as compared to the negative control.
DISCUSSION

Peptic ulcer and gastritis have been associated with multi-pathogenic factors and could be due to disturbances in natural balances between the aggressive factors (e.g. of acid, bicarbonate, pepsin) and maintenance of the mucosal integrity through the endogenous defense mechanism (e.g. of defensive mechanisms of mucus, mucosal turnover and blood supply (mucosal barrier) [14,15]. Generally various non-specific methods are used to restore these imbalances including regular food intake, adequate rest and avoidance of ulcerogenic agents (e.g. Tobacco, Alcohol and Coffee). Their aim is to attenuate and possibly block the gastric acid secretion or to enhance the mucosal defense mechanisms [16]. The latter can be achieved through increasing mucus production, stabilizing the surface epithelial cells, or interfering with the prostaglandin synthesis. In addition, there are also drugs, such as proton pump inhibitors, histamine (H2)-antagonists, anti-cholinergic and antacids, used in the treatment of ulcer [17]. Despite the availability of many pharmaceutical products for the treatment of gastric ulcers in the market as mentioned above, their successes were limited by presence of several adverse effects (e.g. Anaphylaxis reactions, Gynecomastia, Hematopoietic changes, Thrombocytopenia, Acute interstitial nephritis, Nephrotoxicity and Hepatotoxicity) [18,19]. Due to the reported side effects of available antiulcer drugs, focused have been shifted towards natural products as the new sources of antiulcer agents. With the increasingly growing interest in natural medicine, various plants have been studied based on the traditional knowledge of their pharmacological properties and confirmed to be useful in treating and managing ulcer. Furthermore, medicinal plants have been known to be amongst the most attractive sources of new drugs, and have been shown to give promising results in treatment of various diseases including gastric and duodenal ulcers [20,21]. T. capensis has been reported to exert several pharmacological properties such as a traditional medicine to relieve pain and sleeplessness. Dried powdered bark infusions are taken for sleeplessness, reported to induce sleep. It is included in the list of African plants evaluated for in vitro anti-plasmodial activity. This plant has so far not been screened for anti-ulcer Activity. Thus, we take this opportunity to report the preliminary findings on anti-ulcer potential of T. Capensis leaf ethanolic and ethylacetate extracts for the first time here. The present study demonstrated the potential of ethanolic and ethyl acetate extracts significantly reduced gastric ulceration as indicated by the reduction in ulcer index in the aspirin induced method. Chronic use of anti-inflammatory drugs and stress are some of the main causes of gastric ulcers [22], and since ethanol and ethyl acetate extracts exerted significant antiulcer activity under experimental models that mimick those conditions. These results suggested that ethanol and ethyl acetate extracts possesses anti-secretory potency as well as acid neutralizing effect. Furthermore, based on findings by Ubaka et al. the anti-secretory effect is suggested to be one of the mechanism through which the extracts was able to protect the stomach mucosa from NSAIDs (aspirin) induced damage. It is well known that inhibition of prostaglandin synthesis, which is essential for mucosal integrity and regeneration, will trigger the mucosal lining damage. It is also believed that the extracts exert its antiulcer activity by increasing the synthesis of endogenous prostaglandins, which in turn promotes mucus secretion and enhances the mucosal barrier against the actions of various damaging agents [23]. Other than that, leukotrienes antagonist and 5- lipooxygenase inhibitors have been demonstrated to inhibit NSAIDs-induced gastric ulceration in rats. Hence, the observed antiulcer activity of T. Capensis could also be suggested to be due to inhibition of 5-lipoxygenase pathway or to leukotriene's antagonist activity. In recent experiments, it has been found that heat shock proteins (HSPs), specifically HSP70 and HSP47 are involved in the gastric protection. The HSC70 (a constitutive form of HSP70) is co precipitated with COX-1 and the neuronal form of nitric oxide synthase after treatment with a mild irritant (20% ethanol). A positive relationship between enhanced interaction of HSC70 with either Cyclooxygenase-1 or nitric oxide synthase and mucosal defense mechanisms and ulcer healing, most probably through protecting key enzymes related to cytoprotection [24]. In conclusion, the present study provided preliminary data for the first time that the leaves of T. Capensis possesses significant anti-ulcer activity in animal models. It has gastric anti-secretory and acid neutralizing effects that are comparable to reference drug Ranitidine. The anti-ulcer activity is probably due to the presence of bioactive compounds like flavanoids and tannins. Further studies are required to confirm the exact mechanism underlying the ulcer healing and protecting property of the extracts and to identify the chemical constituents responsible for it.

REFERENCE