

Gastroprotective Mechanism of *Ipomoea staphylina* Leaves on Gastric Mucosal Injury in Wistar Rats

Mengjie WU ^{1,2}, Congming HAO ³, Firdous Sayeed MOHAMMED ⁴ & Xiaolin LIAO ⁵ *

¹ Department of Gastroenterology, The People's Hospital of Danyang, Danyang, Jiangsu Province, 212300, China

² Department of Gastroenterology, Affiliated Danyang Hospital of Nantong University, Danyang, Jiangsu Province, 212300, China

³ Department of Traditional Chinese Medicine, Beijing TianlinHongde Institute of Traditional Chinese Medicine, Beijing, 010010, China

⁴ Department of Pharmacology, Calcutta Institute of Pharmaceutical Technology & Allied Health Sciences, Banitabla, Uluberia, Howrah 711316, West Bengal, India

⁵ Department of Gastroenterology, Chongqing Traditional Chinese Medicine Hospital, Chongqing, 400021, China

SUMMARY. Gastric ulcer is a main disorder of gastrointestinal tract. *Ipomoea staphylina* is a woody plant used as a medicinal plant in Asian traditional medicine. This research aimed to evaluate the protective effect of *I. staphylina* leave ethanolic extract against ethanol-induced gastric ulcer in rats. The animals were divided into five groups (normal control, untreated, omeprazole (20 mg/kg), extract (100 mg/kg), and eth extract (200 mg/kg)). The gastric ulcers were induced by a single dose of 90% ethanol. It was found that animals given ethanol had a significantly higher ulcer and semiquantitative scores. Both doses of the extract (100 and 200 mg/kg) appreciably reversed these changes. Furthermore, the extract (100 and 200 mg/kg) improved the function of the endogenous antioxidant enzymes GPx, CAT, and SOD; decreased the inflammatory TNF- α and IL-8 levels, and increased the anti-inflammatory IL-10 levels in the stomach tissue. Besides that, the use of the extract, especially at the higher 200 mg/kg dose, resulted in a significant decline in the apoptotic enzyme (caspase-3) activity and increased HO-1 levels. This research suggests that the protective effect of *I. staphylina* is due to the interactions with antioxidant and inflammatory responses in the cellular level. Further clinical trials are recommended.

RESUMEN. La úlcera gástrica es un trastorno principal del tracto gastrointestinal. *Ipomoea staphylina* es una planta leñosa utilizada como planta medicinal en la medicina tradicional asiática. Esta investigación tuvo como objetivo evaluar el efecto protector del extracto etanólico de hojas de *I. staphylina* contra la úlcera gástrica inducida por etanol en ratas. Los animales se dividieron en cinco grupos (control normal, sin tratar, omeprazol (20 mg/kg), extracto (100 mg/kg) y extracto eth (200 mg/kg)). Las úlceras gástricas se indujeron con una dosis única de etanol al 90%. Se encontró que los animales que recibieron etanol tenían una úlcera y puntuaciones semicuantitativas significativamente más altas. Ambas dosis del extracto (100 y 200 mg/kg) revirtieron apreciablemente estos cambios. Además, el extracto (100 y 200 mg/kg) mejoró la función de las enzimas antioxidantes endógenas GPx, CAT y SOD; disminuyó los niveles inflamatorios de TNF- α e IL-8 y aumentó los niveles antiinflamatorios de IL-10 en el tejido estomacal. Además de eso, el uso del extracto, especialmente en la dosis más alta de 200 mg/kg, resultó en una disminución significativa en la actividad de la enzima apoptótica (caspasa-3) y aumentó los niveles de HO-1. Esta investigación sugiere que el efecto protector de *I. staphylina* se debe a las interacciones con las respuestas antioxidantes e inflamatorias a nivel celular. Se recomiendan más ensayos clínicos.

KEY WORDS: antioxidant, extract, inflammation, *Ipomoea staphylina*, gastric, TNF- α , ulcer.

* Author to whom correspondence should be addressed. E-mail: liaoxiaolin2021@sina.com