

PP 19

## The Secondary Metabolites in Medicinal Plants with Potential Anti-ulcer Activity and Their Mechanism of Actions: An Overview

Kumarapperuma P.<sup>#</sup>, Hettihewa S.

*Department of Pharmacy, Faculty of Allied Health Sciences, University of Ruhuna, Galle, Sri Lanka*

*<sup>#</sup>Corresponding author: pmkumarapperuma@gmail.com*

**Background:** Gastritis is an inflammation, irritation or erosion of the lining of the stomach with the formation of lesions in the gastrointestinal mucosa. Conventional drugs such as proton pump inhibitors, histamine receptor blockers, synthetic prostaglandin, antacids, antibiotics are used to treat peptic ulcers. Since these treatments are reported with undesirable side effects such as gastrointestinal and hepatic toxicities, renal, cardiovascular effects, and hematopoietic effects, use of medicinal plants with anti-ulcer activity is frequently practiced in the traditional medicine due to the less side effects and high recurrence rate after completion of the treatments.

**Objectives:** To report the available data on potential anti-ulcer active secondary metabolites and their mechanism of actions in some selected medicinal plants.

**Methods:** The literature was collected from search engines of ScienceDirect, PubMed, Springer, and Google Scholar using the key words.

**Results:** It is reported that secondary metabolites such as alkaloids, flavonoids, tannins, terpenoids, saponins, glycosides, gums and mucilage present in medicinal plants such as *Cucumis sativus L.*, *Ocimum basilicum*, *Aloe vera*, *Cyclea peltata (Lam) Hook. f. Thoms*, *Aegle marmelos*, *Hibiscus rosa-sinensis*, *Centella asiatica*, *Moringa oleifera*, *Zingiber officinale*, *Lagenaria siceraria*, *Morus alba Linn.*, *Mangifera indica*, *Terminalia chebula*, *Anacardium occidentale*, and *Phyllanthus embilica L.*, play a major role in antiulcer activity via several mechanisms. Alkaloids inhibit gastric acid secretion while increasing blood flow, nitric oxide synthesis, mucus production, bicarbonate secretion and prostaglandin. In addition, alkaloids prevent apoptosis and oxidative injury. Flavonoids increase the mucosal prostaglandin content, decrease of histamine secretion, exhibit anti-*Helicobacter pylori* activity and antioxidant activity with increased superoxide dismutase, catalase, and glutathione enzymes. Certain saponins activate mucus membrane protective factors, inhibit gastric acid and pepsinogen secretion, and increase blood flow. Tannins inhibit the peptic activity of gastric juice. Gums and mucilage cover and protect the mucosa of the stomach and thereby help to prevent gastric ulcers.

**Conclusions:** It is deliberated to sum-up that secondary metabolites in the selected medicinal plants which are used in the treatment of peptic ulcer disease and their mechanism of actions have exhibited gastroprotective properties.

**Keywords:** *Gastritis, Medicinal plants, Peptic ulcer disease, Phytochemicals, Secondary metabolites*