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Gastroprotective effect of standardized leaf extract from *Argyrea speciosa* on experimental gastric ulcers in rats

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ABSTRACT

Ethnopharmacological relevance: *Argyrea speciosa* (L.f), Sweet (Family Convolvulaceae) is used traditionally in Indian System of Medicine as aphrodisiac, rejuvenating agent, intellect promoting agent, brain tonic and in the therapy of hepatomegaly, diabetes and chronic ulcer.

Aim of the study: To study the gastroprotective effect of standardized butanol fraction of *Argyrea speciosa* leaf (ASE).

Materials and methods: The butanol fraction of *Argyrea speciosa* leaf (ASE; 50, 100 and 200 mg/kg body weight) was administered orally, twice daily for 5 days for prevention from Aspirin (ASP)-, ethanol (EtOH)-, cold-restraint stress (CRS) – and pylorus ligation (PL)-induced ulcers. Estimation of antioxidant enzymes activity was carried out in CRS-induced ulcer model, and various gastric secretion parameters like volume of gastric juice, acid output, and pH value were estimated in PL-induced ulcer model.

Result: ASE showed dose-dependent ulcer protective effect in ASP 23.64–58.76% ($p < 0.01$ to $p < 0.001$), EtOH 15.45–58.45% ($p < 0.001$), CRS 19.39–78.36% ($p < 0.001$) and PL 19.67–69.04% ($p < 0.05$ to $p < 0.01$), respectively. The percentage of protection by standard drug ranitidine was 77.77–84.32% ($p < 0.01$ to $p < 0.001$) in various gastric ulcer models. The gastric wall mucus was significantly ($p < 0.001$) enhanced by ASE and is regarded as the first line of defence against EtOH-induced gastric ulcers showing cytoprotective property. ASE showed a marginal decrease in volume, acid pepsin concentration and acid pepsin output. However, ASE reduced the ulcer index with significant decrease in LPO level ($p < 0.001$), and SOD level ($p < 0.01$ to $p < 0.001$) as compared with CRS-induced group. A gradual and significant increase in CAT values were observed at 100 and 200 mg/kg dose levels ($p < 0.01$ to $p < 0.001$).

Conclusions: The results of our study revealed that *Argyrea speciosa* possess significant dose dependent gastroprotective activity, probably due to its free radical scavenging activity.

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1. Introduction

Argyrea speciosa Burm. F. (Convolvulaceae), commonly known as *Vrudhdadaruka* is a rasayana herb used in many ayurvedic preparations in Indian system of medicine. Traditionally the leaves of *Argyrea speciosa* are used as antiphlogistic, emollient, in the treatment of poultices of wounds, skin disease topically, gleet, gonorrhoea and chronic ulcers. The plant is also used as a local stimulant and rubefacient (The Wealth of India: Raw materials, 2004; Kirtikar and Basu, 1981). The leaves are used by natives as a local stimulant and rubefacient in skin diseases (Chadha, 1976). The plant has been reported to possess anti-inflammatory (Gokhale

et al., 2002), wound healing (Kartik et al., 2003), antimicrobial (Shukla et al., 1999), immunomodulatory (Gokhale et al., 2003), nootropic activity (Joshi et al., 2007) and flower possesses anti-diarrheal activity (Rao et al., 2004). Phytochemical screening of the plant has shown the presence of lipids, flavonoids, triterpenes and phenylpropanoids (Chandler and Hooper, 1979; Batra and Mehta, 1985; Khan et al., 1992; Ahmad and Jain, 1993).

The pathophysiology of gastric ulcer has generally focused on imbalance between aggressive and protective factors in the stomach, such as acid-pepsin secretion, mucosal barrier, mucus secretion, blood flow, cellular regeneration, prostaglandins and epidermal growth factors (Lima et al., 2006). The reactive oxygen species especially hydroxyl radical plays a major role in causing oxidative damage of mucosa in all types of ulcers (Das et al., 1997). Herbal drugs obtained from the plant source are relatively less expensive, safe, and possess good tolerability even in higher doses (Goel and Sairam, 2002).

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