ABSTRACT
ABSTRACT

The present study was designed to investigate phytochemically and pharmacologically, the stem bark of *Soymida febrifuga*, a reputed plant in Ayurvedic system of medicine.

Pharmacognostically, the bark under investigation was authenticated by comparing its macroscopical characters with those found in various flora and by studying its transverse section. Numerous corky warts on the outer surface of the stem bark are a distinguishing character. Cells with deep coloured cell contents are found distributed throughout the bark. The cell contents are mostly tannin as confirmed by microchemical test.

Phytochemical screening indicated that the stem bark of *Soymida febrifuga* is rich in procyanidins with other flavonoids, saponins and terpenoids as minor constituents. Subsequent extraction and acid hydrolysis revealed that the procyanidins (flavan-3-ols or condensed tannins) contained catechin or epicatechin units exclusively. HPLC and HPTLC fingerprinting profile was developed to give a distinct chemoprofile to the pharmacologically active fraction.

Pharmacologically the stem bark of *Soymida febrifuga* was evaluated for its antiulcer, hepatoprotective, analgesic, antidiarrhoeal and antibacterial action. The parent extract (SA) of stem bark (80% acetone extract) was fractionated into four different fractions, namely SA1, SA2, SA3 and SA4. Initially all the extracts were studied in aspirin and ethanol-induced gastric ulcer model. Cimetidine (100 mg kg⁻¹) was used as a reference standard for the purpose of comparison.

SA extract tested in rats up to the dose of 2500 mg kg⁻¹ p.o. did not produce any signs of toxicity. Extracts SA, SA1, SA2, SA3 and SA4 inhibited gastric ulceration induced by aspirin and ethanol, where extract SA3 was found to be most potent. Extract SA3 also exhibited dose dependent inhibition of gastric lesions in ethanol-induced gastric ulcer model, the inhibition being greater at higher (500 mg kg⁻¹) dose. In both aspirin and ethanol-induced gastric ulcer models, SA3 extract (500 mg kg⁻¹) showed free radical scavenging effect which was evident from the significant decrease in malondialdehyde (MDA) content. The potency of extract SA3 (500 mg kg⁻¹) being greater than that of other fractions, SA3 extract was further studied in both indomethacin-pretreated ethanol-induced and in 19 h pylorus-ligated...
ABSTRACT

model, to establish the mechanism underlying its antiulcer action. In both indomethacin -pretreated ethanol - induced and in pylorus - ligated models (p.o. and i.p.), extract SA3 (500 mg kg\(^{-1}\)) showed significant reduction in number and severity of ulcers. Also significant reduction was observed in total acidity, volume of gastric secretion, total acid output and pepsin activity when compared with the control group. In addition, significant increase in mucosal glycoproteins i.e. TC:PR ratio and gastric wall mucus content were observed. Extract SA3 did not afford protection against cysteamine - induced duodenal lesions when compared with control group.

Extract SA, SA\(_1\), SA\(_2\), SA\(_3\) and SA\(_4\) (500 mg kg\(^{-1}\) each) were also studied for their hepatoprotective action in carbontetrachloride - induced liver toxicity, measured by pentobarbitone sleeping time. Of all the extracts tested, only extract SA3 significantly inhibited the carbontetrachloride - induced prolongation of pentobarbitone sleep and it was also found to preserve the integrity of liver cell membrane by inhibiting carbon tetrachloride - induced rise of serum GPT, GOT and MDA levels in hepatic tissue.

Extract SA, SA\(_2\) and SA\(_3\) showed reduction in number of writhes in mice in dose dependent manner. The analgesic potency of extracts was in order of SA3 > SA2 > SA. Extract SA3 also produced significant prolongation of reaction time against thermal painful stimuli (tail flick) at higher dose (500 mg kg\(^{-1}\) p.o.). Extract SA\(_1\) and SA4 did not exhibit significant activities in writhing as well as in tail flick models.

Potentiation of pentobarbitone - induced hypnosis in mice was observed with extract SA3 in dose dependent manner. Extract SA, SA\(_1\), SA\(_2\), and SA4 did not potentiate the pentobarbitone – induced hypnosis in mice.

Extract SA\(_2\) significantly inhibited the castor oil - induced intra-luminal accumulation of fluid in mice. However, this effect was not dose dependent. All other extracts were found to be devoid of antidiarrhoeal action.

Extract SA\(_2\) exhibited weak to moderate antibacterial action against eight microorganisms tested by cup bore method. Extract SA was active only against Staphylococcus aureus. Other extracts did not exhibit antimicrobial activity.
ABSTRACT

It can be concluded from our study that of all the extracts tested, extract SA$_3$ of stem bark of *Soymida febrifuga* possesses significant antiulcer activity against experimental gastric ulcers. The mechanism of this can be attributed to decrease in gastric acid secretory activity along with strengthening of gastric mucosal defensive barrier. The extract also possesses hepatoprotective and analgesic activity. Extract SA$_2$ possesses significant but unspecific antidiarrhoeal action and also weak to moderate antibacterial action.