ABSTRACT

The folklore medicinal plants such as *Nardostachys jatamansi* DC and *Smilax zeylanica* Linn. were selected for the study. In this study we aimed to investigate the neuropharmacological effects of *Nardostachys jatamansi* and *Smilax zeylanica* on haloperidol administered rats. In addition we examined the antistress and antioxidant effects of *Nardostachys jatamansi* and *Smilax zeylanica*.

In the present study we have taken ethanol, hydro alcohol and aqueous root extracts of *Nardostachys jatamansi* and ethanolic root extract of *Smilax zeylanica* to carryout phytochemical, HPTLC, in vitro antioxidant, toxicological, pharmacological, biochemical studies and to estimate brain dopamine levels.

The preliminary phytochemical studies confirmed the presence of alkaloids, carbohydrates, proteins, steroids, sterols, tannins, flavonoids, gums and mucilage, glycosides, saponins and terpenes in EENJ, alkaloids, carbohydrates, steroids, sterols, tannins, flavonoids, gums and mucilage, glycosides and terpenes in HAENJ and carbohydrates, steroids, sterols, flavonoids, gums & mucilage and terpenes, in AENJ. The EESZ demonstrated the presence of carbohydrates, proteins, steroids, phenols, flavonoids, gums and mucilage, and saponins.

The HPTLC finger print of EENJ, HAENJ, AENJ and EESZ shows the various spots at different Rf Values from this we identified the no of constituents present in the each extract of the *Nardostachys jatamansi* and ethanol extract of *Smilax zeylanica*. 
EENJ, HAENJ, AENJ and EESZ were subjected to in-vitro antioxidant activity studies using nitric oxide and hydrogen peroxide free radical scavenging models. EENJ and EESZ were showed moderate activity where as hydro alcoholic and aqueous extracts did not show at the tested range for nitric oxide scavenging, all the extracts showed potent antioxidant activity for scavenging of H$_2$O$_2$.

Acute oral toxicity study indicate these two plant extract were safe up to 5000 mg/kg and no mortality was observed. Repeated oral toxicity studies for 28 days also shows no considerable changes in haemotological parameters and histopathology of organs. Hence 100 mg, 250 mg and 500 mg/kg body weight were chosen for further studies.

EENJ, HAENJ, AENJ, and EESZ (100 mg, 250 mg/kg and 500 mg/kg p.o) were administered for 15 days and standard drugs L-dopa+ carbidopa (100+25mg/kg/i.p) were administered 1 hr prior to the challenge with haloperidol (1 mg/kg). A significant reversal of haloperidol inhibited locomotor activity, reversal of haloperidol induced catalepsy and reversal of haloperidol inhibited mobility was observed in a dose-dependent manner.

The inhibition of FST induced immobility was significantly decreased by the treatments of EENJ, HAENJ, AENJ, and EESZ when compared to FST group.

The haloperidol-treated rats showed a significant increase in TBARS and there was also a significant reduction in SOD, CAT, and GSH in the brain tissue. Oral administration of the EENJ, HAENJ, AENJ, and EESZ at doses of 100, 250 and 500
mg/kg along with haloperidol administration significantly restored the peroxides and antioxidant levels to near normal in the brains of the test animals.

The haloperidol-treated rats showed a significant decrease in dopamine levels of the brain tissue. Oral administration of the EENJ, HAENJ, AENJ, and EESZ at doses of 100, 250, and 500 mg/kg along with haloperidol administration significantly restored the dopamine levels to near normal in the brains of the test animals.