ABSTRACT
Parkinson’s disease is a neurological disorder characterized by motor and nonmotor dysfunction due to loss of dopaminergic neurons in substantia nigra. Rotenone has been shown to induce Parkinson-like symptoms in humans.

The study was performed to assess the effect of liquorice root extract (LRE) on rotenone-induced Parkinson-like symptoms in the Wistar rat model.

For the majority of individuals with PD, the cause remains unclear. Some research suggests a genetic cause for PD. Environmental toxins, or a combination of toxins and genetics, are also under consideration as possible underlying causes of Parkinson’s disease in some patients.

EXPERIMENTAL DESIGN: ROTENONE MODEL OF PD

Six groups of ten male rats each were used in the study and included a vehicle control group (0.5% CMC), a rotenone only control group, two liquorice root extract treated groups (150 and 600 mg/kg b. wt.) and positive control groups (Glycyrrhizin 40 mg/kg b. wt. and Levodopa 20 mg/kg b. wt; references of reducing symptoms). For all groups except the vehicle control, the rats received a single intraperitoneal dose of 2 mg rotenone/kg b.wt. The duration of treatment was 28 consecutive days.

Measured parameters included grip strength, locomotor activity, catalepsy, postural instability and assays of lipid peroxidation, dopamine, glutathione and superoxide dismutase from brain and plasma as well as brain histopathology. Rotenone alone administration leads to significantly reduced grip strength and significantly increased score of catalepsy, postural instability and neurodegeneration compared to liquorice high dose and positive control groups. Rotenone related effects were subsided in animals that received either the positive controls or high dose of liquorice. In liquorice root extract treated high dose group as well as positive control groups, a significantly lower incidence and severity of lesions in brain histopathology supported with significantly reduced alterations in levels of superoxide dismutase, lipid peroxidation and dopamine compared to group treated with rotenone alone.

RESULTS

Liquorice extract at 600 mg/kg reduced the neurodegeneration and prevented the motor function deterioration caused by rotenone.

CONCLUSION

Liquorice extract at 600 mg/kg reduced the neurodegeneration and prevented the motor function deterioration caused by rotenone.