SUMMARY:

Parkinson’s disease (PD) is a chronic, progressive neurological disorder. L-Dopa is the most efficacious antiparkinsonian drug and virtually all patients respond to its administration. However, a major limitation to the chronic use of L-dopa is the development of motor complications such as fluctuations and dyskinesia. With advancing disease, it becomes increasingly more difficult to deliver a dose of L-dopa to control parkinsonian motor features and avoid dyskinesia. Thus, efforts are being made to investigate and identify the effective, safe, easily available low cost therapeutic moieties from natural origin with neuroprotective effects with little or no side effects for the management of parkinson’s disease.

- In the present study, five Indian medicinal plants viz., Canavalia gladiata, Barleria prionities, Prosopis chilensis, Dichrostachys cinerea and Capparis zeylanica were selected for evaluation of following studies.

- Results of the present study, alcoholic extract and its fractions of Canavalia gladiata, Barleria prionities and Prosopis chilensis were safe upto at a dose of 3200mg/kg. Slight sedation was observed with alcoholic extract of Dichrostachy’s cinerea and Capparis zeylanica at a dose of 600 mg/kg or above.

- Neuropharmacological screening of Dichrostachy’s cinerea and Capparis zeylanica revealed CNS depressant activity. Hence, these two plants were not screened for antiparkinsonian activity.

- Assessment of neuropharmacological studies of alcoholic extract of Canavalia gladiata, Barleria prionities and Prosopis chilensis showed CNS stimulant activity. Hence, these plants were screened for antiparkinsonian activity.
Antiparkinsonian activity of alcoholic extract and fractions of *Canavalia gladiata*, *Barleria prionities* and *Prosopis chilensis* were carried out in MPTP induced neurotoxicity mouse model.

Behavioural studies were conducted in MPTP treated animals by spontaneous motor activity grip strength and alertness. Spontaneous motor activity, retention time and number of head dippings were decreased in MPTP treated animals. While they were significantly increased with alcoholic extract of CG, BP and PC plant extract.

Brain dopamine level was significantly decreased, other amines viz., epinephrine, norepinephrine and serotonin levels was slightly altered and reduced glutathione level was decreased and MDA level was increased in MPTP treated animals as compared to control group. Brain dopamine, other amines and GSH level was significantly increased and MDA level was significantly decreased with alcoholic extracts and fractions of *Canavalia gladiata*, *Barleria prionities* and *Prosopis chilensis* upon co-administration with MPTP as compared to MPTP treated animals. The order of activity of the plants is as follows.

*Canavalia gladiata* > *Barleria prionities* > *Prosopis chilensis*

Among the fractions studied, Alcoholic and aqueous fractions of all the plants showed maximum effect against MPTP induced Parkinsonism and also had good *invivo* antioxidant effect. It might be due to presence of polar components viz., L-dopa, flavonoids and phenolic compounds, other fractions of all the plants had mild to moderate effect against MPTP induced parkinsonism, it may be due to presence of other components and unidentified active principles, because the earlier reports states that L-dopa free fractions also showed antiparkinsonian activity.
> **Invitro** antioxidant activity of alcoholic extract of all the plants showed promising free radical scavenging activity in various *invitro* antioxidant models. Among the plants *Canavalia gladiata* plant extract showed maximum free radical scavenging activity. It might be due to presence of antioxidant phytoconstituents presence in plant extract.

> Preliminary phytochemical analysis of all the plants showed presence of more polar components like flavonoids, phenolic substances amino acids, proteins, saponins, carbohydrates. It also showed the presence of alkaloids and anthraquinone glycosides.

> Microscopic analysis of all the selected plant parts powder showed the presence of their respective characters. It helps in differentiation of closely related species as well as to detect the adulterants in qualitative way.

> Quantitative pharmacognostic evaluation of crude drugs revealed the exact content. Total ash, acid insoluble, water soluble ash and moisture content, which helps in identification and to prepare correct monograph of crude drug to laid in official Pharmacopoea. Because most of the crude drugs do not have standard monograph and it is very difficult to identify unknown plants. Hence, this study is most important to fix monograph of each and every plant.

**CONCLUSION:**

Now due to implementation of GATT, India needs to take a fresh look at its search strategies. Research in India needs to fall in line with international regulations for intellectual property rights. The future of India lies in innovations therefore the present study will contribute to the knowledge of natural resources which may be helpful in identifying a novel antiparkinson phytochemical with better acceptability than levodopa and also help in strengthening India economy with indigenous development of drugs from natural resources.