3. AIMS AND OBJECTIVES

Diseases of central nervous system are appearing as a major threat in the future because of increasing mental stress, strain and work, which are essential in the developing world, unknowingly this throws into a state where there is more chance of CNS disorders. Herbal drugs are having diversified uses are always an alternative option to the synthetic drugs which are well known for their side and adverse effects.

Since the existing antiparkinson’s drugs encounter many side effects and need for prolonged treatment including questionable efficacy in the treatment, may cause Parkinson’s related movement problems, hallucinations and orthostatic hypotension. These reasons force the area of research to find improved treatments which will counteract the side effects and drawbacks of the existing treatment.

3.1. Selection of Plants:

Appropriate selection of plants is very essential as any inappropriate selection can lead to wasting of time and resources.

According to Elisabetsky and Moraes, there are three different methods of approach for the selection of medicinal plants.

a) Randomized Method: Investigation takes an arbitrary course

b) Chemotaxanomical/phylogenetical: Species are selected according to given chemical category of substances in a genus or family.
c) Ethnopharmacological: Selection of plants is based on their therapeutic use by an ethnic group.

There is another aspect with which everyone agrees. If the selection of plant is made on the ground of their traditional use, the chances of research success are greater\textsuperscript{182, 183}.

After analyzing the above two aspects, the author has considered ethnopharmacology and availability as well and the author selected the following plants.

1) \textit{Nardostachys jatamansi} DC belongs to family: valerianaceae

2) \textit{Smilax zeylanica} Linn belongs to family: Smilacaceae were selected.

\textit{Nardostachys jatamansi} used in culinary and is widely used in the ayurvedic formulations for various CNS disorders and in the folkloric system of medicine \textit{Smilax zeylanica} was used in Parkinson’s disease, and various CNS disorders. So, an attempt has been made to evaluate the role of \textit{Nardostachys jatamansi} and \textit{Smilax zeylanica} in the treatment of Parkinson’s disease which if proven to be satisfactory will be beneficial in the prevention of these disorders in the future.

\textit{Nardostachys jatamansi} is indigenous to the alpine himalayan regions of India. In ayurveda roots of \textit{Nardostachys jatamansi} are used as a bitter tonic, stimulant, antispasmodic and anticonvulsant\textsuperscript{184}. The decoction of the drug is also used in neurological disorders, insomnia\textsuperscript{185}. Ethanolic extract of NJ causes an overall increase in the levels of biogenic amines (NE, DA, 5-HT) and inhibitory neurotransmitters (GABA) in rat brain\textsuperscript{165, 168}.
**Smilax zeylanica** Linn. is an evergreen woody climber endemic to Western Ghats of Southern India. The roots are used to treat syphilis, gonorrhea, swellings, abscesses and boils. Chopachinee is an important drug used in ayurveda for the treatment of several diseases like diseases of the nervous system, epilepsy, psychosis, urinary disorders, polyuria, hemiplegia, parkinson’s disease, congenital diseases, leprosy, rejuvenator, blood purifier.

The effect of *Nardostachys jatamansi* and *Smilax zeylanica* in the treatment of haloperidol induced Parkinsonism has not been reported. Neuropharmacological screening of *Nardostachys jatamansi* and *Smilax zeylanica* is performed to obtain data on its role on the ameliorations of symptoms of experimental Parkinson’s disease induced by haloperidol in rats.

### 3.2. Plan of Work:

1. Collection and identification of plants
2. Extraction and phytochemical screening
3. HPTLC fingerprinting studies
4. Invitro antioxidant studies
5. Toxicity studies
6. Pharmacological studies
7. Biochemical Studies
8. Estimation of Dopamine levels
3.3. Design of the Experimental Protocol:

The experimental protocol was designed with the following objectives:

1. To study the activity of EENJ, HAENJ, AENJ and EESZ in the haloperidol induced catalepsy in Wister rats.

2. To study the antistress activity of EENJ, HAENJ, AENJ and EESZ against FST induced stress in Wister rats.

3. To study the role of EENJ, HAENJ, AENJ and EESZ on brain enzymes in haloperidol administered Wister rats.

4. To study the brain dopamine levels in haloperidol administered rats and EENJ, HAENJ, AENJ and EESZ treated rats.