PLAN OF WORK AND METHODOLOGY

1. **Extensive literature survey:-**
   Literature review for undertaking the study will be done by referring various national and international journals, published articles in various official standard books and referring to various websites on the internet.

2. **Collection of plant material :-**
   The collection of plant material will be done from local areas of Karnataka.

3. **Authentication of plant material :-**
   The authentication of the plant material will be identified botanically by RRI (Regional Research Institute) Bangalore, Karnataka.

4. **Preparation of organic extracts:-**
   The herbs will be extracted with 200 ml of each organic solvent (hexane, chloroform, ethyl acetate and methanol) and the solvents will be evaporated by vacuum rotary evaporator.

5. **Isolation of the essential oil:-**
   Plant material will be subjected to hydrodistillation for 3 h using a Clevenger type apparatus. The oil will be dried over anhydrous Na2SO4 and preserved in a sealed vial at 4 °C until further analysis.

6. **Phytochemical tests of extracts (Essential oil composition analysis):-**
   The extracts collected from the above step will be studied for various preliminary phytochemical tests as per standard biochemical evaluation of herbal extracts. Gas chromatography-mass spectrometry analysis Quantitative and qualitative analysis of the essential oil will be performed.

7. **Toxicological study:-**
   The successive extracts of herbal plant will be subjected to toxicological study as per OECD guidelines.
8. **Ethics committee approval:**
   The Ethics Committee will be invited for the evaluation of the study and for the approval of the study. The study documents generated will be submitted to the Ethics Committee two days prior to the meeting.

9. **Pharmacological screening of extracts:**
   The pharmacological screening of the successive extracts of herbal plant (S) will be done for preclinical evaluation\(^{59}\).

10. **Procurement of study drugs:**
    For this study, marketed formulation of the piracetam, Donepezil and Rivastigmine will be used as standard drugs as well as and scopolamine (inducing agent) will be procured from sigma Aldrich India. Herbs such as Cymbopogon *Citrus or Andropogon Citrus*\(^{54}\) and *catnip (Nepea Cataria)*\(^{55}\) will be collected and assessed.

11. **Animals to be used:**
    Swiss mice and Wister rats of either sex will be used for the experiment.

12. **Experimental methods to be used:** For this study, methods like Exteroceptive behavioural models (Radial Arm maze, Passive avoidance apparatus, Morris water maze and Elevated plus maze) and Interoceptive behavioral models will be used\(^{60,61,62}\).

13. **Biochemical parameters:** Whole brain AChE activity and determination of neurotransmitter concentration in cerebellum, cerebral cortex, hypothalamus, hippocampus, pons and corpus striatum will be done.