

CHAPTER 2

SCOPE AND OBJECTIVES OF THE STUDY

The estimations of world health organization portrays that nearly three quarters of the population in the developing countries depend on herbal medicine for their primary health care needs. Textual facts reveal that mankind had been using plant based therapy since ancient times to treat various chronic diseases. The advancement in medical technology has led to an increase in the life span of the individuals which in turn has increased the percentage of the elderly worldwide. This increase in the percentage of elderly has also increased the incidence of Senile Dementia of Alzheimer's Type globally. As seen the health care of the elderly is of great social and economic burden to the nation as they are mainly affected by non communicable disease rising the need for their long term care because they loss their ability to live independently due to limited mobility, frailty or other physical or mental health problems. Hence there is an urgent need for the improvement in the health care of elderly and SDAT subjects.

To light up to the above facts, the drugs currently used to treat dementia and AD exhibit enormous side effects which are of great concern. Based on the safety, cost effectiveness and immense therapeutic value of the herbs the present study was carried out to investigate the neuroprotective and cognitive enhancement activity of a novel polyherbal formulation which consists of three prime medicinal plants used in the traditional system of medicine namely *Bacopa monnieri*, *Hippophae rhamnoides* and *Dioscorea bulbifera*. Use of polyherbal formulation has been recorded in the *Ayurvedic* literature "*Sarangdhar Samhita*" dated centuries ago in 1300 A. D.

The preliminary aim of the present research work was to investigate the neuroprotective and cognitive enhancement effects of polyherbal formulation in prevention and management of age related neurodegenerative disorder with special reference to Senile dementia of Alzheimer's type by transforming normal ageing to a successful and healthy brain ageing thus preventing early progression of SDAT. The following are the series of study that has been conducted with specific objectives.

- Standardization and quality control of the polyherbal formulation in accordance to ICH & WHO guidelines.
- Evaluation of the *In vitro* antioxidant activity of the formulation through DPPH, ferric thiocyanate, OH radical scavenging assays.
- Evaluation of the *In vitro* neuroprotective effect of the polyherbal formulation on human neuroblastoma cell line IMR32 against stress induced exo-cytotoxicity using hydrogen peroxide induced model.
- Evaluation of the *In vivo* neuroprotective effect of the formulation on ageing brain model- to investigate the dose dependent effect of polyherbal formulation over age associated neurochemical, cognitive function and age associated lipofuscin pigmentation.
- Evaluation of the efficacy profile of the polyherbal formulation on the human subjects both normal aged and SDAT cases. Therapeutic effect was assessed on the following biomarkers- Biochemical, inflammatory markers, oxidative stress markers, neuroelectro-psychological markers.