Alzheimer's disease (AD) is a devastating neurodegenerative disorder manifested by deterioration in memory and cognition, impairment in performing activities of daily living, and many behavioural and neuropsychiatric illnesses. Alzheimer's disease is the most common form of dementia in the old age. The percentage of persons with Alzheimer's disease increases by a factor of 2 with every 5 years of age, so 1% of 60 year old and 30% of 85 year old have the disease. By 2050, the number of cases in US is predicted to rise to 13.2 million. An Indo-US study assessed prevalence of Alzheimer disease in a setting of rural India. In 2000, India had 3.5 million patients with Alzheimer disease against US, which had 4.5 million patients with Alzheimer disease. But with an increase in the geriatric population in India, number of AD patients is growing at a phenomenal rate. In 2005, the geriatric population was 10% of the whole population. By the year 2021, every seventh Indian will be a senior citizen.

Various strategies have been investigated to cure AD, but the use of cholinesterase inhibitor drugs has been the most clinically successful. Scientists developed so many drugs which are helpful to increase memory, learning and intelligence because the major symptoms of Alzheimer's Disease were memory loss. The neurotransmitters like ACh, Dopamine, Norepinephrine, Serotonin, Glutamate etc., play major role in learning and memory so the drugs which are developed for increasing memory are mainly targeted to alter these neurotransmitters levels. Now-a-days, in the market so many memory enhancing drinks such as brain Speed Shake, brain Speed Smoothie, Mocha Focus Delight etc., and foods and drugs (nootropics) are available and these memory enhancing drinks are having structural similarities to anti Alzheimer's drugs. People are very much fascinated to take these memory enhancing products to boost up their memory. This kind of misuse of the drugs which actually meant for treating a dreadful disease viz. Alzheimer's, if consumed, particularly by children to improve their performance skills might pose them to certain unpredictable behavioural threats in later stages of their life rendering them unfit for existence. Hence, the present research investigation is one such attempt in the direction of evaluating the long term effects of Galantamine hydrobromide, one of the recently invented and mostly used memory enhancing drug on some selected physiological and biochemical parameters in the brain of albino mice.
The first chapter deals with the determination of ED50 and also morphometric and behavioural changes in mice on chronic treatment with Galantamine hydrobromide. In the second chapter, the modulatory effect of Galantamine hydrobromide on the Cholinergic system in different regions of mice brain for chronic exposure were assessed. In the third chapter, changes in Glutamate metabolism were complied to see the interaction of Galantamine hydrobromide with the energy synthesizing caliber of mice brain. In the fourth chapter, the Application of Lipinski's rule of five so some selected anti-Alzheimer's drugs was tested in order to know whether they obey all the conditions of Lipinski's rule of five.

The present study by itself is not an exhaustive one, as it only throws light on the possible effects of Galantamine hydrobromide on a couple of neurotransmitter such as i.e., cholinergic and glutamatergic in different areas of mice brain which resulted in the overall perceptible changes in the behaviour of the animal. From the above results on morphometric and behavioural aspects, neurotransmitter system and drug validation studies, it is finally concluded that, even though intake of memory enhancing drugs for short-term period improves all cognitive skills thus the overall performance of mice, but consumption of these drugs without Alzheimer's disease has not been recommended as it may lead to impairment of cognitive functions at later stages of life.