Chapter-III

PROBLEM AND HYPOTHESES

As already discussed in Chapter-I, brain is an essential part of the body which controls and coordinates sensation, perception, motor movements and even cognition. In case of any kind of damage to it or its constituent neurons, all the activities of the brain are affected. Dementia is also a disease, which is thought to be caused by damage to the brain (Cote, 1985; Carson et. al., 1998; Durands and Barlow, 2000).

Dementia is a miserable situation and its effects are enormous. This term is used to describe a syndrome of generalized, global loss of higher mental functions, the causes for which could be many. The power to use cognitive skills becomes unenergetic, the memory and learning abilities diminish, motor and sensory abilities along with, the coordination are lost and the patient becomes dependent upon the family members. The life of both, the patients and the attendants becomes very difficult and unmanageable.

The physical scientists and the pharmacists are in search of an agent that is capable of improving the demented condition since the disease is known. These types of investigations could be of great benefit to the patients of dementia of various types.

It is evident from the discussion and studies reviewed in first two chapters that some chemicals play an important role in treatment of dementia by reducing the inactivation of the neurotransmitter acetylcholine and thus potentiate the cholinergic neurotransmitter, which in turn produces a modest improvement in memory and goal-directed thought. These include donepezil, rivastigmine, galantamine (Heston, 1983). Tacrine treatment is also an effective treatment of Alzheimer if used in the proper content of clinical guidelines (Lykotos, Corazzine, Steel, and Koraus, 1996). ACTH4-9 (Galliard and Varey, 1979), vasopressin (Gold, Weingartner, Ballenger, Goodwin, Post, 1979), and velnacrine (Antuono, 1991), also have been found to play vital role in the treatment of dementia.

But these chemical substances can be harmful particularly if the use is long term, leading to slower heart rates, fainting episodes, dizziness, nausea, sedation, drowsiness, sleep disturbance, and weight loss (Bartus, Dean, Beer, and Lippa, 1982). Therefore, in recent years, focus on plant research, has increased all over the world and a large number
of evidences have been collected to show the immense potential of medicinal plants used in various traditional systems.

In one of the pharmaco-epidemological survey carried out by Karandikar, Pandit, and Kulkarni (1997) in adults over 60 years of age, it was revealed that about 47% of the elderly use herbal drugs. The main reason for usage of herbal drugs is the belief that these have lesser side effects.

The World Health Organization (WHO) estimates that about 4 billion people of the world population currently use herbal medicines for their primary health in one or the other way (Farnsworth, Akerele, Bingel, Soejarta, and Eno, 2003).

A lot of Ayurvedic medicines for cognitive enhancement are being marketed which have an important role in brain functioning, these include Brahmi, Ginkgo biloba, Huperzia seratta, Acetyl-L-carnitine, Colistrinin, Shankhapushpi and so on. Brahmi is a popular cognitive enhancing herbal medicine (Dubey et. al., 1994; and Limpeanchob et. al., 2008). A lot of work has been done on Ginkgo biloba, Huperzia Seratta, Acetyl-L-carnitine, and Colistrinin, which actually shows a contradictory evidence (Zhang et. al., 1991; Xu et. al., 1995; Kanowski et. al, 1996; Le Bars et. al., 1997; Maurer et. al., 1997; Xu et. al., 1999; Montgomery et. al., 2003; Bilikiewicz et. al., 2004; Scripnikov et. al., 2007; Dodge et. al., 2008; Van et. al., 2008; and Yancheva et. al., 2009).

Another popular herbal cognitive enhancer is Shankhapushpi. There is although not much, but some research work, that has been conducted to find out its role in cognitive enhancement (Sharma et. al., 1965; Sharma, 1966; Singh and Mehta, 1966; Chaturvedi et. al., 1966; Mudgal et. al., 1972; Mudgal, 1975; Priyanka et. al., 2004). Amongst animals, passive avoidance task has been shown to improve in performance due to Shankhapushpi (Siripurapu et al., 2005). Amongst human beings, the tasks like FDS, BDS, recognition, serial learning etc. have been shown to enhance as a result of administration of Shankhapushpi (Priyanka et. al., 2004; and Batra et. al., 2008). Although these studies are sparse, yet these are indicative of cognitive enhancing properties of Shankhapushpi. Similarly, some studies are available that indicate Shankhapushpi to be an anxiety reducing (Singh et. al., 1977; Shukla, 1979; Indurwade et. al., 2000; Shaughnessy, 2002; Cerevenka et. al., 2006) and depression reducing herb (Singh, et. al., 1977; Dhingra, et. al., 2007). Although, the studies available are extremely
sparse, yet these all indicate that Shankhapushpi is both a cognitive enhancer and anxiety/depression reducing drug. May be that is why it is called a neural tonic. In dementia, most affected features are the cognitive functioning and quality of life. According to DSM-IV TR, dementia is characterized by multiple cognitive deficits including memory impairment. It is accompanied by impaired emotional control and moral and ethical sensibilities (Albert et. al., 1974). Therefore, it was thought worthwhile to try Shankhapushpi as an agent to treat dementia. This will also confirm both of the above discussed effects.

Since 24.3 million people in the world are suffering from dementia, the work will have a wide implication. Keeping this in mind the following research problem was formulated:

**Problem:**

“To investigate the effect of Shankhapushpi on Dementia Rating and Quality of Life amongst the patients of Senile Dementia of Alzheimer’s Type (SDAT) and Multi-infarct Type (MIT)”.

**Objectives:**

1. To assess the effect of Shankhapushpi on dementia rating amongst the patients of senile dementia of Alzheimer’s type (SDAT) and multi-infarct type (MIT).
2. To assess the improvement in Quality of life (QoL) amongst the patients of these two types of dementia as a result of administration of Shankhapushpi.
3. To assess the duration dependent effect of Shankhapushpi on dementia rating and Quality of Life of these two types of dementia patients

**Hypotheses:**

1. Administration of Shankhapushpi would lead to a reduced rating of dementia.
2. Administration of Shankhapushpi would lead to an enhanced quality of life (QoL) amongst dementia patients.
3. Both of the above effects would enhance as a result of lengthened duration.