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A clinical study to evaluate the efficacy of *Ashtanga Ghrita* in Dementia

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ABSTRACT

Dementia is defined as an acquired deterioration in cognitive abilities that impairs the performance of activities of daily living. In Ayurveda literatures this disease is explained under the concept of *Jara Vyadhi*. In elderly people there will be loss of cognitive abilities viz. *Grahana*, *Dharana* and *Smarana* because there is gradual diminution in the qualities of *Dhatu* and dominance of *Vata*. An individual can lead a normal happy life if one has a sound intellectual capacity with a good memory. Any impairments to his memory will have an effect on the quality of his living standards, thus this condition is chosen for the present study. Present study is a single group open clinical trial with pre and post-test design on 30 subjects. Subjects were administered with *Ashtanga Ghrita* for 60 days. The results were obtained on parameter viz. Impaired memory, Visuospatial disorientation, Apraxia, Impaired visuospacial drawing, Impaired judgement, Impaired language the result obtained statistically non-significant in the management of Dementia. However, it was observed the symptoms such as anger and irritability were reduced.

Key words: *Ashtanga Ghrita*, *Dementia*, *Jara Vyadhi*.

INTRODUCTION

Dementia is a disease of progressive cognitive decline with relatively intact consciousness. International classification of diseases ICD 10 describes it "as a syndrome due to disease of the brain, usually of chronic or progressive nature, in which there is evidence of a decline in both memory and thinking which is sufficient to impair personal activities of daily living, without clouding of consciousness and is commonly accompanied or preceded by deterioration

in emotional control, social behaviour or motivation.^[1]

If not properly managed, these demented subjects may become helpless, incapable of remembering the names of close relatives, they may wander into dangerous situations, oblivious of their surroundings. Alzheimer's Dementia is a progressive relentless loss of mental function characterized by degeneration of brain tissue including loss of nerve cells and development of senile plaques and neurofibrillary tangles. It's prevalence in those over 60 years of age ranges between 5-20% in the western nations, Dementia (and Alzheimer's Disease) prevalence rate in India 4.86 % (1.91 %) in age > 55 years and 6.44 % (3.56%) in age >65 years.^[2]

The drugs promoting *Medha* (intellect), *Smriti* (memory) are termed as *Medhya* drugs. *Ayurveda* System of Medicine has mentioned several medicinal plants under the category '*Medhya*'. By virtue of improving cognitive abilities major influence several medicinal plants mentioned as '*Rasayana* Drugs' in *Ayurveda* are primarily claimed as '*Medhya*'. Further there is a special class of some *Rasayana* drugs called

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'Medhya Rasayana' which is supposed to be having specific influence on higher brain functions. Keeping in view the above concepts, signify the role of *Ghrita* in improving mental functions *Bruhmana Sneha* administration of *Ashtanga Ghrita* has been selected in this study.

OBJECTIVE OF THE STUDY

To evaluate the efficacy of *Ashtanga Ghrita* in Dementia.

MATERIALS AND METHODS

Source of Data

Subjects were selected from the OPD and IPD of Government Ayurveda Medical College and Hospital, Mysuru, Government Hi - Tech Panchakarma Hospital, Mysuru, Old Age Home in Mysuru, special camps and other referral sources.

Inclusion Criteria

Subjects of all gender between the age group of 60-85 years with Senile Dementia and diagnosed cases of Alzheimer's Disease were selected.

Exclusion Criteria

Secondary Dementia caused due to Parkinson's disease, vascular causes, head injury, alcohol abuse, hydrocephalus, HIV and syphilis were excluded.

Subjects suffering from uncontrolled diabetes mellitus (RBS>250mg/dL), hypertension (>170/100mmHg), ischemic heart disease and other systemic disorders which interferes with the course of intervention were excluded.

Diagnostic Criteria

Diagnostic and Statistical Manual-5 (DSM 5) criteria was used for diagnosis, that is - one or more acquired significant impairments (independence lost) in cognitive domains such as:

1. Memory (amnesia)
2. Language (aphasia)
3. Execution of purposeful movement (apraxia)
4. Recognition / familiarity (agnosia)

5. Visuopatial function (topographical disorientation)
6. Self-control / management (executive functions impairment)
7. Other examples:
 - a) Mathematics (dyscalculia)
 - b) Emotional expression /comprehension (dysprosody)
 - c) Writing (agraphia)

Assessment

Assessment was done based on - The Rowland Universal Dementia Assessment Scale: A Multicultural Cognitive Assessment Scale.^[3]

Statistical Methods

The results were analysed statistically by using below statistical methods.

- Descriptive statistics
- Chi-square test
- Paired sample 'T' test
- Using SPSS for windows

Intervention

Bruhmana Sneha Prayoga of *Ashtanga Ghrita* for 60 days.

Dose - 12 gm as a single dose per day.

Anupana - Hot water

Time of administration - (5.30 am- 9am) before food

The assessment was done based on following 3 schedules;

Pre-test assessment - Before the commencement of intervention (day zero).

Mid test assessment - In the middle of intervention (30th day).

Post-test assessment - After the completion of intervention (60th day).

OBSERVATION AND RESULTS

The data was collected from the subjects based on diagnostic criteria. The results were analysed statistically using Pearson Chi-Square test.

Memory impairment

Out of 30 subjects, before intervention 2 subjects (6.7%) had score 0, 4 subjects (13.3%) had score 2, 11 subjects (36.7%) had score 4, and 13 subjects (43.3%) had score 6 on Memory impairment.

On 30th day of intervention, out of 30 subjects, 2 subjects (6.7%) had score 0, 2 subjects (6.7%) had score 2, 15 subjects (50.0%) had score 4 and 11 subjects (36.7%) had score 6 on Memory impairment.

After the completion of intervention on 60th day, 2 subjects (6.7%) had score 0, 2 subjects (6.7%) had score 2, 15 subjects (50.0%) had score 4 and 11 subjects (36.7%) had score 6 on Memory impairment.

The result obtained regarding the parameter on Memory impairment showed statistically insignificant result with P value p- 0.919.

Visuospatial disorientation

Out of 30 subjects, before intervention 30 subjects (100%) had score 5 on Visuospatial disorientation.

On 30th day of intervention, 30 subjects (100%) had score 5 on Visuospatial disorientation.

After the completion of intervention on 60th day, 30 subjects (100%) had score 5 on Visuospatial disorientation.

Apraxia

Out of 30 subjects, before intervention 1 subject (3.3%) had score 0, 29 subjects (96.6%) had score 2 on Apraxia.

On 30th day of intervention, out of 30 subjects, 2 subjects (6.7%) had score 1, 28 subjects (93.3%) had score 2 on Apraxia.

After the completion of intervention on 60th day, 2 subjects (6.7%) had score 1, 28 subjects (93.3%) had score 2 on Apraxia.

The result obtained regarding the parameter on Apraxia showed statistically insignificant result with P value p- 0.673.

Impaired visuoconstructional drawing

Out of 30 subjects, before intervention 2 subjects (6.7%) had score 1, 12 subjects (40%) had score 2, 16 subjects (53.3%) had score 3 on Impaired visuoconstructional drawing.

On 30th day of intervention, out of 30 subjects, 3 subjects (10%) had score 1, 11 subjects (36.7%) had score 2, 16 subjects (53.3%) had score 3 on Impaired visuoconstructional drawing.

After the completion of intervention on 60th day, 3 subjects (10%) had score 1, 11 subjects (36.7%) had score 2, 16 subjects (53.3%) had score 3 on Impaired visuoconstructional drawing.

The result obtained regarding the parameter on Impaired visuoconstructional drawing showed statistically insignificant result with P value p- 0.989.

Impaired judgement

Out of 30 subjects, before intervention 1 subject (3.3%) had score 0, 1 subject (3.3%) had score 2, 1 subject (3.3%) had score 3, and 27 subjects (90%) had score 4 on Impaired judgement.

On 30th day of intervention, out of 30 subjects, 1 subject (3.3%) had score 1, 5 subjects (16.7%) had score 3, 24 subjects (80.0%) had score 4 on Impaired judgement.

After the completion of intervention on 60th day, 1 subject (3.3%) had score 1, 1 subject (3.3%) had score 2, 4 subjects (13.3%) had score 3 and 24 subjects (80%) had score 4 on Impaired judgement.

The result obtained regarding the parameter on Impaired judgement showed statistically insignificant result with P value p- 0.554.

Impaired language

Out of 30 subjects, before intervention 1 subject (3.3%) had score 3, 2 subjects (6.7%) had score 4, 4 subjects (13.3%) had score 5, 8 subjects (26.7%) had

score 6, 2 subjects (6.7%) had score 7 and 13 subjects (43.3%) had score 8 on Impaired language.

On 30th day of intervention, out of 30 subjects, 6 subjects (20%) had score 4, 2 subjects (6.7%) had score 5, 8 subjects (26.7%) had score 6, 3 subjects (10%) had score 7 and 11 subjects (36.7%) had score 8 on Impaired language.

After the completion of intervention on 60th day, 4 subjects (13.3%) had score 4, 5 subjects (16.7%) had score 5, 6 subjects (20%) had score 6, 2 subjects (6.7%) had score 7 and 13 subjects (43.3%) had score 8 on Impaired language.

The result obtained regarding the parameter on Impaired language showed statistically insignificant result with P value p- 0.804.

DISCUSSION

According to *Charaka Samhitha*, *Prajna* has three components which are *Dhee*, *Dhriti* and *Smriti*.^[4] In Dementia there may be impairment of all these components with intact consciousness. The prime component affected is *Dhee* which can be considered as cognitive decline. As *Dhee* and *Smriti* are interlinked with each other along with cognitive decline, memory impairment an important feature of Dementia.

According to *Charaka Samhitha* disease is named based on *Prakruthi*, site of manifestation, causative factors, and signs and symptoms. Discussed in the context of *Vataja Nanatmaja Vikara Vataja Bhrama* is a condition which has close resemblance with Dementia. Impairment of *Smriti* is one of its important features. However specific term for Dementia is not mentioned in any Ayurveda classical textbooks.

It is mentioned in *Charaka Samhitha* that during old age quantity as well as quality of *Dhatu* is decreased. Role of *Agni* in Ageing - *Dhatu* are regularly nourished by dietary substances and *Agni* is responsible for the conversion of dietary substances into formation of *Dhatu*.

Dominance of *Vata Dosha* is responsible for *Vishamagni* which affects the digestion and causes under nourishment of the *Dhatu*.

It may have an impact on low status of *Dhatvagni* and nourishment for *Uttarottara Dhatu*.

Dementia occurs mainly in *Jara*, impairment of *Prajna* occurs due to the effect of Dementia. Since the action of *Rasayana* is in the whole body, changes occur at both, physical and psychological level.

According to various research works nootropic drugs are a heterogeneous group of drugs developed in Dementia and other cerebral disorders. They decrease levels of arousals and stress in the central nervous system. It is suggested to improve attention, learning, memory, and vigilance. Promote healthy brain functioning by repairing damage, promoting nerve growth, and maintaining neuronal health. Many of these supplements are taken for their antioxidant properties and are thought to help maintain optimal cognition and prevent cognitive decline.

Medhya Rasayana is type of *Rasayana* which is said to improve the cognitive functions. The benefits of the *Medhya Rasayana* are similar to nootropics in few aspects.

Ashtanga Ghrita is a well-balanced preparation including the drugs which have *Medhya*, *Rasayana*, *Smritikara* and *Ayushya* properties.^[5] The Ingredients of *Ashtanga Ghrita* includes following drugs as follows:

Bakuchi which possesses *Rasayana* action, dietary total prenylflavonoids from the fruits of *Psoralea corylifolia* prevents age related cognitive deficits and down regulates Alzheimer's markers.^[6]

Vidhara also *Vrishya*, has *Rasayana* properties and it contains scopoletin: antiamyloidogenic, anticholinesterase, and neuroprotective potential of a natural compound.^[7]

Shankapushpi and *Mandookaparni* has *Medhya* action, both are *Tikta Rasa* in nature.

Shatavari has *Rasayana* properties and its ethanolic extracts from roots possesses an outstanding source for natural nootropic.^[8]

Brahmi also having *Medhya*, *Rasayana* action, it contains antioxidant properties to reduce oxidative stress in the ageing brain.^[9]

Vacha has *Medhya* action, studies showed that *Acorus calamus* rhizome extract effect on the neuromodulatory system.^[10]

Guduchi is one among the *Medhya Rasayana* and research studies showed that it has possesses free radical scavenging and anti-proliferative activities.^[11]

Cow's milk has *Madhura Rasa, Madhura Vipaka, Vatahara* properties. It nourishes all *Dhatu* right down to the *Ojas*.

Ghrita is said to be *Vatahara* also *Smriti Kara, Medhakara, Ayushya* and it increases the *Agni*. It acts as a *Rasayana* which gives strength to the body. It receives the properties of *Samskara* (processing with drugs). Ghee has been considered immensely superior to other fats mainly because of the presence of short chain fatty acids and carrier of four fat soluble vitamins A, D, E, K. Hence by virtue of its lipid soluble property it can cross Blood Brain Barrier thus proving as an effective drug for CNS.^[12]

Majority of the ingredients in *Ashtanga Ghrita* are having *Madhura Vipaka, Medhya, Rasayana, Vatahara* properties. It will do the *Dhatuposhana* helping the management of Dementia.

Thus, *Ashtanga Ghrita* is a neurotropic drug both as a prophylactic and curative medication.

The results obtained on parameter Impaired Memory impairment, Visuospatial disorientation, Apraxia, Impaired visuoconstructional drawing, Impaired judgement, Impaired language was statistically non-significant in the management of Dementia.

Reason for statistically nonsignificant results

The nonsignificant result obtained may be due to short duration of the intervention. As Dementia is one of the chronic progressive disorders it needs months of regular efforts to delay the progress of the disease.

Sample size was small to draw the conclusion and generalise it.

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