

Comparative evaluation of the efficacy of Shatavari ghanavati & Bramhi ghanavati in Jarajanya smritibramsha (Senile Dementia).

Abstract:

Background - Memory is the important physiological process which is required to live normal life. Good and bad memories helps living being in stay protected from harms. In old age, these aspect of normal human physiology get deteriorated. This occurs due to increase in Vata dosha. As age progresses there is increase in vata causing diminished memory. There are various drugs which are prescribed by doctors for age associated memory disorder. Bramhi, Shankpushpi, Mandukparni are the well-known drugs as memory booster. But in Bhavprakash Samhita and Kashyap samhita, Shatavari is described for its nootropic property. Aim - Comparative evaluation of Shatavari ghanavati and Bramhi ghanavati in Jarajanya smritibramsha (Senile Dementia).

Objectives –

1. To confirm the most safest and effective dose of Shatavari in senile dementia by reverse pharmacology approach.
2. To evaluate the efficacy of Shatavari ghanavati on cognitive function in Senile dementia.
3. To evaluate the efficacy of Bramhi ghanavati on cognitive function in Senile dementia.
4. To evaluate the efficacy of Shatavari ghanavati as an Antioxidant.
5. To evaluate the efficacy of Bramhi ghanavati as an Antioxidant.
6. To evaluate the comparative efficacy of Bramhi ghanavati and Shatavari ghanavati on cognitive function in Senile dementia.

Methodology – In this study there will be two parts, to define safest and most effective dose in Senile dementia by reverse pharmacology and main study. In reverse pharmacology, 10 patients will be selected in each group. After this, 30 patients will be selected in control arm of bhamhi ghanavati and 30 in Shatavari ghanavati, experimental group. Patients will be assessed with MMSE scale.

Results – Shatavari is well known rasayan drug. Along with this, its has medhya (nootropic properties). It will work on memory as it acts as an antioxidant. The property will be studied by assessing SOD and MDA.

Conclusion – Conclusion will be drawn according to results.

Keywords: human physiology, pharmacology, antioxidant, Senile dementia

Introduction –

Mental health is the important aspect in living being. Intellectual power is boon for Human being. According to WHO, mental health is included in the definition of health¹. In Ayurveda, ‘Prasannaatmendriyamanaha’ is mentioned in definition of ‘Swasthapurusha’ means healthy person². Mental health and Physical health are related to each other. Memory is inevitable part of mental health. This memory gets deteriorated as the age progresses.

Aging is a physiologic state in which a progressive decline of organ functions is accompanied with the development of age-related diseases³. Dementia or memory loss is one of them. It not

only affects that particular individual but also his family members and society. Memory is important thing for surviving normally. Loss of memory is called as dementia and dementia caused due to old age is known as senile dementia. Dementia is impaired cognitive function in the setting of a normal conscious level. Dementia is a chronic confusion state associated with loss of higher functions like memory, judgmental capacity and language without altered consciousness⁴. There are various causes of dementia such as drugs, depression, old age and endocrinal abnormalities. The prevalence rate of Senile Dementia is 0.49 % in India.⁵Oxidative stress is contributing factor in process of ageing and consequently age associated memory loss. Oxidation is normal and necessary process that takes place in body. Oxidative stress occurs when there is an imbalance between free radical activity and antioxidant activity. OS is responsible for 'n' no. of pathological conditions taking place in human body such as Diabetes mellitus, atherosclerosis, inflammatory conditions, Cancer and Age associated memory loss (senile dementia)⁶. It is impossible to completely stop the free radical formation and oxidative stress. But an individual can minimize the effect by taking antioxidants. Superoxide dismutase level is beneficial in avoiding increased free oxygen radicals.⁷There are various treatment modalities for treating dementia such cholinesterase inhibitors. Still there is no remedy for complete cure, but symptomatic benefit is found with acetyl cholinesterase inhibitors (AChEI) (donepezil, rivastigmine and galantamine) and memantine, which is a N-methyl-D-aspartate partial antagonist. In the absence of more effective therapies, these medications persist as a vital option in managing dementia⁸. The side effects testified in presently existing "second-generation" AChEIs are nausea (11%-47%), vomiting (10%-31%), looseness of the bowels (5%-19%), and anorexia (4%-17%).⁹These G. I. T side effects are fairly well known by concerning physician.

Ayurveda has solution for diseases occurring in every age group. In fact the eight main branches which are depicted in Ayurveda literature includes 'Jara' as separate branch¹⁰. According to Ayurveda memory is Smriti. In Rasayan benefits, Smriti is included in it.¹¹Shatavari is a drug which is commonly used for gynecological conditions such as leucorrhea, post-menopausal depression¹². According to Acharya Bhavaprakash, it can be given as Medhya and Rasayana. It is depicted that Shatavari is antioxidant and nootropic in properties. Here we are going to evaluate the efficacy of Shatavarighanavati in senile dementia.

In Ayurveda, one drug can be used in various ways in various diseases. There are some drugs which are used for only one particular disease. Shatavari is one of them which is used in classical ways in women health-related problems. Reverse pharmacology is best way to revalidate the various actions of drugs.

Background -

Historical review of Medha –

Significance of Medha is depicted in Medhasukta of Upanishadhas. Those mantras are offered to goddess for gaining intelligence. Medha is compared with Sunrays.

Purana – In Puranas, Bramhiyog is depicted as Medhasmrutikara.

Samhita kala –Medhya term is depicted in Bruhatrayee namely Charak, Sushruta and vagbhata samhitas.Charak Samhita has given a complete chapter of four parts for rasayan therapy. Medhya rasayana is one of them.

Adhunik Kala -There are many researches going on regarding nootropic properties of drugs. Bramhi is the most known drug for nootropic and cognitive functions.¹³

In Ayurveda, Rasayan is constitution of drugs which have antioxidant properties. Acharya Charak, Acharya Sushruta and Acharya Vaghbhat has depicted Rasayan and its benefits in their literatures. There are many drugs which act on Smriti (memory). So, we can evaluate the effect of Rasayan in Jarajanya smritibhramsha (senile dementia)

Dravya i.e medicine is the one of the four components for successful management of disease. According to acharya Charak, Laghupakam, Sukhaswadam, Preenanam, Vyadhinashana are the properties of matrayukta aushadh.

Reverse Pharmacology –

Reverse pharmacology consists of four stages.

1. Selection of herbal remedy – According to Bhavprakash and acharya Kashyap, Shatavari can be given in memory related disorders.
2. Dose escalating clinical trial – In this stage the most effective and safest dose is found out by taking clinical trials.
3. Randomized clinical trial – In this stage, RCTs are conducted.
4. Isolation of active ingredient.

Research Gaps Analysis –

- Shatavari is used in women related health issues. There are only 2 studies which are conducted on animals to prove its nootropic property.
- No Human trail is done yet.
- There is no reverse pharmacology adapted for deciding the most effective dose of Shatavari in Senile dementia.
- There are only two studies conducted on Shatavari for accessing its Medhya property. Both studies were done on animal model.
- Bramhi is the commonly used drug for age associated memory disorders. So, the availability is less. Hence the chances of adulteration are more.
- In samhitas, Bramhi is described as medhya. In practice also it is used for its Medhya properties.
- Comparative study of Bacopa monneire and Asparagus racemose is not conducted yet.
- Animal studies has been conducted; no human trial is done on Shatavari.
- Solidified water extracts are not used in any study. Shatavari roots contains saponins which are water soluble¹⁴. So, it will give beneficial effect.
- Shatavari is generally used in female reproductive health complications such as Polycystic ovarian disorder, female infertility, hormonal imbalance and post-menopausal depression.¹⁵ But Acharya Bhavprakash has given the Medhya & Rasayani properties of Shatavari¹⁶
- Some are done on elderly but oxidative stress is not included. It is important to access oxidative stress as Oxidative stress found in cognitive dysfunction. MDA is oxidative stress marker whereas Superoxide dismutase level defenses from reactive oxygen species. So, its need of an hour to study the effect and relation between oxidative stress level and Shatavari ghanavati in senile dementia.

Research question –

Whether Shatavari ghanavati is as effective as Bramhiganavati in Jarajanya smritibramsha (senile dementia)?

Hypothesis –

Null Hypothesis H_0 – Shatavarighanavati is not as effective as Bramhiganavati in Jarajanya smritibramsha (senile dementia).

Alternate Hypothesis H_A – Shatavarighanavati is as effective as Bramhiganavati in Jarajanya smritibramsha (senile dementia)

Aim - Comparative evaluation of Shatavari ghanavati and Bramhi ghanavati in Jarajanya smritibramsha (Senile Dementia).

Objectives –

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Material with information regarding Standardization

REVERSE PHARMACOLOGY –

1. **Selection of herbal remedy** – It is already described in literature review.

Material & method-

I. Drug source –

Raw drug will be procured from ‘Acharya aushdhalay Nashik’ and its authentication will be done at Dravyaguna department at MGACH & RC.

Drug details –

Group A- Bramhi ghanavati

Dravya	Part used
Bramhi Panchang	

Group B –Shatavarighanvati.

Dravya Part used

ShatavariMula (Root)

These will be prepared in ghanvati form.

II. Subject source-

Patients suffering from Jarajanya Smritibhramsha will be clinically diagnosed will be selected randomly from OPD and IPD of department of Kayachikitsa, MGACH & RC, Salod (H), Wardha

2. Dose escalating clinical trial –

The dose of Ghana is 250 mg – 500 mg in Siddhayog samgraha by Vaidya Yadavji Trikamji acharya.¹⁶ The most effective and safest dose will be decided by reverse pharmacology approach. The pilot study will include 10 subjects in both arms receiving 250 mg and 500 mg of Shatavari ghanavati respectively. The duration of pilot study shall be 2 months with the same methodology as per the RCT. After selection of best dose, randomized placebo control double blind clinical study will be conducted on that dose.

Posology:-

Group A – 10 patients will be selected randomly and Shatavari ghanvati 250 mg BD will be given with Koshnajal after meal.

Group B – 10 patients will be selected randomly and Shatavari ghanvati 500 mg BD will be given with Koshnajal after meal.

- Total 20 patients who fulfill the inclusion criteria will be selected.
- Both groups A & B will be given medicine for continuous 90 days.
- Inform consent will be taken from each patient before commencement of medicine.
- Each patient will be followed-up on 30th, 60th and 90th day.

Inclusion criteria –

1. Patients of age group 60 years to 75 years.¹⁷
2. Patients of senile dementia of MMSC scoring 18-23¹⁸ (Mild cognitive impairment)

Exclusion criteria –

1. Patients with delirium, hallucinations, diagnosed Parkinson's disease patients, stroke, intracranial hemorrhage, brain tumors, history of alcoholism or drug dependence, use of any psychotropic drug.
2. Patients with loss of bodily competences, such as walking, sitting, and holding one's head up, ability to swallow, to regulate the bladder and bowel function.
3. Patients with loss of ability to communicate.

Withdrawal criteria:

- 1) If Patient had any adverse drug effect during treatment.
- 2) If patient is no more willing to continue the treatment.

Assessment Parameters –

- Mini Mental State Examination (MMSE)

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Dose and route of administration

Number Of Volunteers (Sample Size)	20 (10 in each group)
Medicine/ Intervention	Shatavari Ghanavati (SGV)
Duration	12 weeks
Dose	
Group 1	(Shatavari ghanavati) SGV 300 mg
Group 2	(Shatavari ghanavati) SGV 600mg
Time	Morning and evening (After meal)
Route Of Administration	With lukewarm water

3. Randomised clinical trial –

Randomised clinical trial will be done on 60 patients divided equally in two groups.

Posology:-

Group A – 30 patients will be selected randomly and Bramhi ghanvati 500 mg BD will be given with Koshnajal after meal.

Group B – 30 patients will be selected randomly and Shatavari ghanvati (most effective and safest dose according to reverse pharmacology) will be given with Koshnajal after meal.

- Total 60 patients who fulfill the inclusion criteria will be selected.
- Both groups A & B will be given medicine for continuous 90 days.
- Inform consent will be taken from each patient before commencement of medicine.
- Each patient will be followed-up on 30th, 60th and 90th day.

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3. Patients with loss of ability to communicate.

Withdrawal criteria:

- 1) If Patient had any adverse drug effect during treatment.
- 2) If patient is no more willing to continue the treatment.

Assessment Parameters –

- Mini Mental State Examination (MMSE) By ultraviolet spectrophotometer



- Super oxide Dismutase level (SOD)
- Malondialdehyde level (MDA)

Statistical analysis:

The observations will be analyzed by using student unpaired t test.

Result – Result will be given after the study.

Discussion:

Shatavari is mainly used as galactagogue and used in women related health issues. But Acharya bhavprakash and Acharya Kashyap described its medhya properties. As Vata and age are directly proportional to each other, increase in age causes increase in Vata in the body. Smritibramsha is nanatmaja vata vyadhi according to Acharya Charak. Shatavari has Madhur(sweet) and tikta(astringent) properties. It is guru (heavy) and snigdha(oily) which is exactly opposite to Vata properties. Due to its these properties it will act as Vata and pitta shamak. Along with this, it has antioxidant property. Oxidative stress is one of the physiological factor which causes ageing.²⁶⁻³⁸

Conclusion - It will be drawn from statistical analysis.

Ethical approval –

Research ethics approval; approval from research ethics committee has taken. No. MGACHRC/IEC/July – 2021/314

Publication plan -

- Systematic review
- Protocols
- Study Articles

Translatory Component -

If the proposed study results in the positive outcome, Shatavari Ghanavati can be advised in mild senile dementia.

Report of the concerned Allied Subject Heads –

It will be given after completion of study.

NOTE:

The study highlights the efficacy of "herbal" which is an ancient tradition, used in some parts of India. This ancient concept should be carefully evaluated in the light of modern medical science and can be utilized partially if found suitable.

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