

**EVALUATION OF SMRUTIRHASA (MEMORY LOSS) IN OLD AGED INDIVIDUALS AND EFFECT OF BRAMHI SIDDHA GHRITA ON SHORT TERM MEMORY LOSS****Bhargav G. Tappe¹, Sampada S Sant², Abhijeet Gawai³**

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<https://doi.org/10.46607/iamj0808082020>

(Published online: August 2020)

Open Access

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Article Received: 17/07/2020 - **Peer Reviewed:** 04/08/2020 - **Accepted for Publication:** 14/08/2020

**ABSTRACT**

Memory disorders are increasing at fast rate in modern society. Neurological disorders like Alzheimer's disease, Parkinson's disease also affect memory. Due to ageing process a greater number of old aged individuals are facing problem of memory loss i.e. *Smrutirhasa* (Memory Loss) which leads to their behavioral change and cognitive impairment ultimately leads to land them in senile dementia. In first part of study 100 old aged individuals were randomly selected for evaluation of *Smrutirhasa* in second part of study, effect of *Bramhi Siddha Ghrita* was observed for period of 2 months after obtaining Short term memory status of individuals having *Smrutirhasa*. According to statistical analysis 66% of individuals above 60 years were having *Smrutirhasa* and treatment by *Bramhi Siddha Ghrita* shows significant result over short term memory loss in them.

Keywords: *Smrutirhasa*, *Bramhi Siddha Ghrita*, short term memory loss.

INTRODUCTION

According to *Acharya Charaka* deterioration of *Smruti* (Memory) leads to *Pradhnyaparadha* (Volitional transgression) which is one of the main reasons to get diseased¹ and also above the age of 60 year there will be deterioration of many functions and *Smruti* is one of them². In *Ayurveda* classics, different aspects of *Smruti* are described in *Prakruti Pariksha* (Examination of body type). We cannot change *Prakruti* (Body type) of a person. But if one knows capacity & accuracy of his memory, it can be improved by using various memory aids.

Now a day, due to changed lifestyle & increased stressful life and ageing process a greater number of old aged individuals are facing problem related to memory. Memory disorders are also increasing at fast rate. Neurological disorders like Alzheimer's disease, Parkinson's disease also affects memory. Process of ageing causes *Smrutirhasa* in old age people which leads to behavioral change and cognitive impairment and senile dementia in them. Senile dementia affects life of individual along with society. To live the healthy life, person must be physically and mentally fit. For keeping physical fitness there are description of many *Rasayana* (rejuvenating therapy), *Vyayam* (Exercise) and *Ahara* (dietary pattern). Knowing the importance of *Smruti*, *Acharya Charaka* has described the *Rasayana* like *Endra Rasayana*³ which includes the memory enhancing drug *Bramhi*⁴. *Ghrita* (Ghee) is also described as *Vayasthapanam Param*⁵ i.e. an age stabilizer agent and can be taken by the old aged individuals who wants to have good *Smruti*⁶.

Modern science has limitations to improve *Smruti* in old aged persons as it is due to ageing process. So the present study entitled "To evaluate *Smrutirhasa* in old aged individuals and effect of *Bramhi Siddha Ghrita* on short term memory loss" is a humble attempt to study the *Smrutirhasa* in old aged individuals and to study the effect of *Bramhi Siddha Ghrita* over short term memory loss. In first part of study 100 old aged individuals were randomly selected for evaluation of *Smrutirhasa* (Memory Loss). In second part of study after obtaining Short term memory status of individuals having *Smrutirhasa*, effect of *Bramhi Siddha Ghri-*

ta was observed for period of 2 months. According to statistical analysis 66% of individuals above 60 years were having *Smrutirhasa* and treatment by *Bramhi Siddha Ghrita* shows significant result over short term memory loss in them.

Objectives

1. Evaluation of *Smrutirhasa* in old aged individuals.
2. To study the effect of *Bramhi Siddha Ghrita* in *Smrutirhasa* (short term memory loss) due to ageing process in old aged individuals.

Material and Methods

Ethical clearance-Institutional Ethics Committee Approval and Regulatory Compliance

Before the initiation of the study, the study protocol and related documents were reviewed and approved by Institutional Ethics Committee at Govt. *Ayurved* College, *Vazirabad, Nanded*. The study was conducted in accordance with Schedule Y of Drugs and Cosmetics act, India, amended in 2005. IEC Clearance No –GAC/IEC-NO/168/2014, Date 10/12/2014.

1) Selection of the volunteers: -

Study was conducted in two parts.

In first part, following Criteria was applied to evaluate *Smrutirhasa* (Memory Loss) in old aged individual.

A) Inclusive criteria: -

1. 100 volunteers had selected.
2. Sex: Irrespective of male female
3. Education: Above 10th standard
4. Age cohort : 60- 80 yrs.

In the second part, effect of *Bramhi Siddha Ghrita* on short term memory was studied. For this study following inclusive criteria was applied.

1. Individuals having score less than 7 obtained by applying questionnaire (A) had selected.

B) Exclusive Criteria:

1. Persons having senile dementia.
2. Persons having DM, cerebrovascular diseases.
3. Persons having psychiatric disorders i.e. schizophrenia, depression, generalized anxiety disease.
4. Persons having Alzheimer's disease.
5. Persons having history of brain trauma i.e. stroke, accident, etc.

6. Persons having sensory organ impairment i.e. blindness, deafness, etc.
7. Persons having neurological disorders. i.e. parkinsonism etc.
8. Persons having blood pressure > 160/90, serum total cholesterol level >200, serum triglyceride level >15.

Method of preparation of Bramhi Siddha Ghrita

Bramhi was taken in Bharad (crude) form and was soaked overnight in 16 liters of water (1:8). ¼ i.e. 4-

liter Kwath (decoction) was prepared⁷. Filtered Kwath was mixed with 1 liter of cow Ghee (Ghrita) and 250 gm of Bramhi Kalka (paste). The mixture was boiled on low heat till all water get evaporated and only Ghee (Ghrita) remained and all Snehasidhi Lakshana⁸ were obtained.

Standardized Bramhi Siddha Ghrita has standardization values as

1	Refractive index	1.4560
2.	Acid value of	2.57 ml of KOH

Design of Study

1. 100 volunteers having age between 60-80 years were randomly selected.
2. Memory score was obtained by applying Questionnaire (A) and evaluation of Smrutirhasa was done.
3. A group of 30 volunteers having score less than or equal to 7 obtained by applying Questionnaire (A) were selected.
4. Questionnaire (B) was applied and their short-term memory score was obtained from the above group. In This Questionnaire picture was shown for 15- 20 minutes and Questions based over that picture were asked and score was obtained.
5. Bhamhi Siddha Ghrita was given to the above group of volunteers for a period of 60 days with a dose of 20 ml at morning and evening after meal and volunteers were followed up on 0th, 30th, 60 day.
6. At 60th day again Questionnaire (B) was applied and short-term memory score was obtained after the treatment by Bramhi Siddha Ghrita.
7. Establishment of short-term memory score obtained by Questionnaire (B) before and after the

treatment by Bramhi Siddha Ghrita for evaluation of result was done.

Parameters

1. Questionnaire (A) For Smrutirhasa examination.

It contains 21 questions based on the Lakshanas of memory in different Prakruti. Each yes answer has given one score and no answers has given zero score. For convenience of subjects and accuracy of result questions were translated in their regional language. Scoring Pattern was for Pravara Smruti (good memory) 15- 21yes answers, Madhyama Smruti (average memory) 8-14 yes answers and Avara Smruti (low memory) less than or equal to 7 yes answers

2. Questionnaire (B) Standardized short term memory scale

It was named as Material for Accuracy of Testimony, used to find the significance of treatment on short term memory loss with Bramhi Siddha Ghrita. It contains one picture showing an incidence of accident in city and 34 questions based on that picture. For convenience of subjects and accuracy of result, picture was labeled in regional language and questions were also translated in regional language of subject.

Observation and Results

Table 1: Smruti wise distribution of subject.

Smruti	Pravara	Madhyam	Avara	Total
No of subjects	12 (12%)	22 (22%)	66 (66%)	100 (100%)

Table 2: Age wise distribution of 100 subjects according to Smruti

Sr. no.	Age groups	Smruti			Total
		Pravara	Madhyam	Avara	
1.	60-65	5 (13.15%)	9(23.68%)	24(63.15%.)	38(100%)
2.	66-70	4 (9.30%)	8(18.60%)	31 (72.09%)	43(100%)
3.	71-75	2(18.18%)	4(36.36%)	5(45.45%)	11(100%)
4.	76-80	1 (12.5%)	1(12.5%)	6(75%)	8(100%)
	Total	12 (12%)	22 (22%)	66(66%)	100(100%)

Table 3: Prakruti wise distribution of 100 subjects according to Smruti

Sr. no	Prakruti	Smruti			Total
		Pravara	Madham	Avara	
1]	Vata Pradhan	1 (1.72%)	4 (6.89%)	53 (91.37%)	58
2]	Pitta Pradhan	4 (20%)	7 (35%)	9 (45%)	20
3]	Kapha Pradhan	7 (31.81%)	11 (50%)	4 (12.5%)	22
	Total				100

Table 4: Dhatu Sarata wise distribution of 100 Subjects according to Smruti.

Sr. no	Sarata	Smruti			Total
		Pravara	Madhyam	Avara	
1]	Uttam	3(60%)	1(20%)	1(20%)	5 (100%)
2]	Madhyam	4 (11.76%)	9 (26.47%)	21(61.76%)	34 (100%)
3]	Hina	5 (8.19%)	12 (19.67%)	44(72.13%)	61 (100%)
	Total				100

(2) Effect of treatment on Short term memory score

Table 5: Showing the effect of Bramhi Siddha Ghrita on ‘short term memory loss.’

	Mean	S.D	S.E	“t” calculated	P	t- table
BT	6.080	1.816	0.2569	2.682	< 0.05	2.011
AT	6.400	1.773	0.2507			

DISCUSSION

Age: Above the of 60 years i.e. in *Jirna Vayaavastha* (old age) there is deterioration of memory along with *Dhatubala, Dhatuguna, Indriyabala, Sharirabala* and many more⁹. Also, there is predominance of *Vata Dosha* in *Jirna Vayaavastha*¹⁰ which is responsible for *Smrutirhasa* above 60 years.

According to modern science working memory, episodic memory and short-term declines as age progresses. Due to ageing there is degradation of white matter and also there is decline in the interconnection networks spanning frontal, temporal and parietal lobe which enables different aspects of memory.

Prakruti: According to *Acharya Charaka Vata Prakruti Laskan* is *Shrutagrahinyo-Alpasmrutayashcha*¹¹ (the one who can get things quickly but forgets easily) and according to *Acharya Vaghbata* it is *Shighraarambhakshobhgrahavismaran*¹². So, it can be concluded that *Vata Pradhan* individual will grasp quickly and forgets quickly and they are having low memory (*Alpasmrutayah*) as compared other individual. They mentioned that *Pita Prakruti* have *Madhyamdhyandhnyan*¹³ i.e. they have Average memory. According to them *Kapha Prakruti* individual are *Smrutiman*¹⁴ i.e. they have a good memory.

Dhatu Sarata: Dhatu Sarata Parikshan is a method of examination to assess Dhatu quality wise & quantity wise¹⁵. Uttam Dhatusarata indicates that, qualitatively, quantitatively and functionally Dhatu is effective and Hinasarata indicates that Dhatu is less effective than its normal stage. Hinasara Dhatu causes vitiation of Vata Dosha which leads to the reduction of Smruti in Avara Dhatu Sara Purusha as compared to Uttam and Madhyam Dhatusara Purusha.

Discussion on Evaluation of Smrutirhasa: Above the of 60 years i.e. in Jirna Vayaavastha (old age) there is deterioration of memory along with Dhatu-bala, Dhatuguna, Indriyabala, Sharirabala and many more due to predominance of Vata Dosha. Chala Guna of Vatadosha which is opposite to Sthira Guna affects the Dharan function i.e. holding and recalling property of brain. According to Acharya Vagbhata Vatadoshavrudhhi causes Majja Dhatu Shoshana¹⁶ (degeneration of nerve fibers) and Indriyabrash (impairment of sense organ), which ultimately leads to Smrutirhasa in old aged individuals.

Discussion on Result: Out of 100 Subjects 66% subjects were having Avara Smruti, 22% subjects were having Madhyam Smruti, 12% subjects were having Pravara Smruti. So, majority of subjects were having Avara Smruti. So, there is Smrutirhasa in individuals above the age of 60 which is Jirna Vayaavastha. In this stage there is predominance of Vata Dosha along with the age-related degeneration of all Dhatu with Majja Dhatu (Nervous tissue). Degeneration of Majja Dhatu can lead to Indriya Bala Kshaya (impairment in the function of nervous tissue) which ultimately responsible for the Smrutirhasa in Jirna Vayaavastha i.e. in old age.

Effect of Bramhi Siddha Ghrita on short term memory loss

In the second part effect of Bramhi Siddha Ghrita on short term memory loss was studied. For that out of 66 subject 50 subject having Avara Smruti were selected. 16 subjects were eliminated from the study as they failed to follow the protocols of the study. As mean value of calculated “t” is greater than the table value Bramhi Siddha Ghrita significantly improve the short-term memory score.

Probable mode of action of drug: Bramhi Siddha Ghrita reaches up to the minute channels by Sukshmaguna of Sneha and nourishes the tissue cells. Bramhi Siddha Ghrita contains Bramhi and Cow ghee (Ghrita). Bramhi has Tridoshaghna property. Chala-Ruksha Guna of Vatadosha and Ushna-Tikshna Guna of Pitta Dosha are responsible for the Smrutirhasa. Bramhi cause Vata Dosha Shaman by its Madhura Rasa and Pitta Dosha Shaman by its Kashaya-Tikta-Madhura rasa and Shitavirya. Bramhi nourishes the brain tissue and responsible for the regulation of Majjavaha Srotas function. Bhamhi has Rasayana property by its Madhurguna and Vipaka.

According to Charaka old age individual who wants to improve memory should use Ghrita as a Snehapana. So Bramhi Siddha Ghrita was prepared and used in the treatment. It is given in 20 ml dose BD after meal i.e. in Vyanodan Bhesajya Kale. Maintenance of Smruti is function of Udanvayu and Sadhaka Pitta. The Bramhi Siddha Ghrita which was used at Vyanodan kale in the current study responsible for Shaman and regulation of Smaranam function of Udanvayu. Bramhi Siddha Ghrita causes Shaman of the Sadhaka Pitta who controls the function of Buddhi and Smruti. According to modern science Bramhi has anti-anxiety, anti-depressant, sedative, smooth muscle relaxant, anti-spasmodic and memory enhancing property¹⁷. Bramhi increases the retention of information; improve the IQ levels, general debility, behavioral patterns, mental concentration and mental clarity and memory recall due to presence of Becoside A and Becoside B. Bramhi increase the level of serotonin a brain chemical known to improve relaxation to improve memory function by boosting brain function and by reducing the anxiety. It increases the sense of calm and peace in the users. By increasing the protein synthesis, it increases the activity of brain and improves the mental alertness and enhances the learning capacity of brain. It neutralizes all the free radicals inside the brain, the lining of brain cells are also get protected and its action prevents long term damage to nerve tissue making up brain. Bacoside A1-A3, Bacopasaponins A-G(4-7), Bacopasids I-V(8-9) in Bramhi modulates various neurotransmitters such as

acetylcholine, serotonin (5-hydroxytryptamine) i.e. 5HT, GABA (gamma amino butyric acid), glutamate (glu) and dopamine at the different brain regions to enhance the memory. Bacoside influences the serotonergic system due to interaction with the cholinergic system. The improvement observed into the hippocampus dependent learning is due the combined effect of serotonin and cholinergic system. This is conformed to the finding the multiple neurotransmitters which are involved into the learning and memory process.

CONCLUSION

From the current study it is concluded that there is presence of *Smrutirhasa* (Memory Loss) in old aged individuals which was mentioned in literature. Age, *Prakruti*, *Dhatu Sarata* (quality of Dhatu) are the factors affecting the memory status of old age individual. *Vataprakaruti Purusha*, *Avara Dhatu Sarata* and age-related degeneration of *Majja Dhatu* may lead to *Smrutirhasa* (Memory Loss) in old age individuals. *Bramhi Siddha Ghrita* causes *Shamana* of *Vata Dosha*, by its *Madhura Rasa*, *Snigdha*, *Guruguna*. It improves the regulatory activity of *Sadhak Pitta* and *Udan Vayu* which controls memory function. *Bramhi Siddha Ghrita* has anti-anxiety, anti-depressant, sedative, smooth muscle relaxant, anti-spasmodic and memory enhancing property which increases the retention of information, improve the IQ levels, general debility, behavioral patterns, mental concentration and mental clarity and memory recall due to presence of Becoside A and Becoside B which modulates various neurotransmitters such as acetylcholine, serotonin(5-hydroxytryptamine) i.e. 5HT, GABA (gammaamino butyric acid), glutamate (glu) and dopamine at the different brain regions to enhance the memory.

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Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Bhargav G. Tappe et al: Evaluation Of Smrutirhasa (Memory Loss) In Old Aged Individuals And Effect Of Bramhi Siddha Ghrita On Short Term Memory Loss. International Ayurvedic Medical Journal {online}; 2020 {cited August, 2020} Available from: http://www.iamj.in/posts/images/upload/4078_4083.pdf