

## Management of Dementia of Alzheimer's type (DAT) with *Medhya Rasayana Churna*

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### Abstract:

Dementia of Alzheimer's type (DAT) is a progressive inevitable loss of cognitive function associated with the manifestation of senile plaques in the hippocampal area of the brain. It is most common form of dementia among middle age and older adults which accounts for 60-80 percent of dementia cases. An open clinical trial was conducted to evaluate the efficacy of *Medhya Rasayana Churna* (MRC) in clinically diagnosed patients of DAT belonging to the age group of 50-80 years. 5gm MRC was given twice a daily after food with *Madhu* and *Ghrita* in unequal quantity for 12 weeks. Effect of therapy was assessed by *Manas Bhava* (51.56%), *Agnibala* (50.89%), *Dehabala* (52.12%) and *Satvabala Pariksha* (54.43%), which were statistically highly significant. Due to *Medhya*, *Dipana*, *Pachana*, *Srotoshodhaka* properties it helped in improvement in outcome measure in DAT. Thus it is concluded that this *Rasayana* is beneficial in Dementia of Alzheimer's type.

**Keywords:** Ayurveda, Dementia of Alzheimer's type, *Medhya Rasayana*.

Received: 18.07.2021 Revised: 09.12.2021 Accepted: 15.12.2021 Published: 25.12.2021

### Quick Response code



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### Introduction:

In India 4.1 million people are suffering from Dementia, in that 3.7 are because of Alzheimer's disease's figure may double by 2030. People over the age of 60 are becoming victim of Alzheimer's, where 70% women carrying burden of the disorder. Alzheimer's disease is the sixth-leading cause of death. <sup>[1]</sup> However, it may cause even more deaths than

official sources recognize. Alzheimer's is also a leading cause of disability and poor health. Before a person with Alzheimer's dies, he or she lives through years of morbidity as the malady progresses. The currently available drugs for the treatment of Alzheimer's disease do not alter the condition and progress of the disease. As they produces adverse effects in the patients, so it cannot be used for prolong

time. To alter the current situations, need to search the alternative effective therapy, which will correct the present condition and also retard the progression of the disease by preventing the formation or clearing of plaques. So study has been planned with aim to evaluate the effect of *Medhya Rasayana Churna* (MRC) in the management of Dementia of Alzheimer's type (DAT). The MRC is an herbal preparation containing Mandukaparni (*Centella asiatica* Linn.), Guduchi (*Tinospora cordifolia* (wild) Miers.), Shankhapushpi (*Convolvulus pleuricaulis* Chois.), and Yashtimadhu (*Glycyrrhiza glabra* Linn.). These drugs are mentioned as *Medhya dravyas* by Acharya Charaka.<sup>[2]</sup> The efficacy of *Medhya Rasayana* is well documented in the previous studies where the herbs have been extensively researched for their Nootropic effects.<sup>[3-4]</sup> The study has been planned with aim to evaluate the effect of *Medhya Rasayana* in the management of Dementia of the Alzheimer's type.

### Materials and methods:

#### Study design:

An open clinical study was conducted at Parul Institute of Ayurved, Parul University, Vadodara, Gujarat. The study protocol, case record forms, regulatory clearance documents, product related information and informed consent form were submitted to the Institutional ethical committee (PIA/IECHR/2016-17/KC/009). This study is registered in Clinical Trial Registry of India (CTRI/2017/05/008563).

#### Inclusion Criteria:

As per DSM-IV-TR criteria<sup>[5]</sup>, diagnosed cases of DAT of Age group of above 50yrs and below 80yrs irrespective of sex, Religion, Socio-economic Status were included in this study.

#### Exclusion Criteria:

- Patients who are completely dependent on others for daily activities
- Cerebrovascular disease, Parkinson's disease, Huntington's disease, subdural hematoma, normal pressure hydrocephalus, brain tumor.
- Hypothyroidism, vitamin B12 or folic acid deficiency, niacin deficiency, hypocalcemia, neurosyphilis, HIV infection
- Substance induced conditions.

#### Criteria for Assessment:

Changes in *Manas Bhava pariksha*- Ayurvedic classics have explained mental factor examination deliberately and the means to assess all mental factors by inference are described in Charaka Samhita.<sup>[6]</sup> Utilizing these means, a specialized rating scale for mental factor examination is prepared by giving scores to various presentations of mental state.

1. *Manas Artheshu Avyabhichranena* (existence of *Mana* from the perception of specific objects)
2. *Vignyanam Vyavasayena* (knowledge of thing from proper reaction)
3. *Medha- Grahanena* i.e. "*Granthadidharanena*" (intelligence from the power of comprehension of Scriptures)
4. *Smriti Smaranena* (memory from the power of remembrance)
5. *Upadhi- Anubandhanena* i.e. "*Uttar Kalinaphalena*" (problem solving)
6. *Sandhya Namagrahanena* (recognition from the recollection of the name)

Assessment of changes in *Agnibala, Dehabala, and Satvabala Pariksha*<sup>[7]</sup>

#### a. *Agnibala pariksha*

1. *Jaranashakti* (*Jeerna Ahara lakshana-Utsah, Laghuta, Udgarsuddhi, Kshut, Trishna pravritti Yathochit malotsarga.*)

2. *Abhyavaranashakti* (quantity and frequency of food)
3. *Ruchi Aharakale* (willing towards all the *Bhojya padartha*)
4. *Vata Mutra Pureesha retasam mukti* (daily bowel, micturition and flatulence habit)

**b. Dehabala pariksha**

- a. *Bala vriddhi* (as per work ability)
- b. *Bala swara varna yoga* (Texture, Luster & voice)
- c. *Shareera Upachaya* (body built-Height, Weight etc.)

**c. Satvabala pariksha**

1. *Nidra Labho Yathakulam* (adequate sleep at night)
2. *Sukhenach pratibodhana* (feeling of well-being)
3. *Vaikarikanam swapnam adarshanam* (absence of discomfoting dreams)

4. *Mano-buddhi indriyanam avyapti* (proper functioning of mind & sense organs)

**Time points:** The outcomes were measured after screening at baseline (BT) and at the end of 12 weeks (AT).

**Intervention:** 5gm MRC was given twice a daily after food with *Madhu* and *Ghrita* in unequal quantity for 12 weeks.

**Observations:**

Among 12 registered, one subject discontinued from the study without citing any specific reason. The data was analyzed statistically using the subjects who completed the protocol. Maximum number of subjects (45.45%) belonged to 61-70 years of age. Majority of the included subjects were males (63.63%), educated up to high school (36.36%), of middle-income group (81.81%) and retired from Job (45.45%).

**Effect of therapy:**
**Table-1: Effect of therapy on *Manasika bhavas*:**

<i>Manasika bhavas</i>	Mean		%	Mean Diff.	Diff. SD	Diff. SE	t value	p value
	BT	AT						
<i>Manas Artheshu Avyabhicharanena</i>	1.64	0.64	60.97	1.00	0.00	0.00	(+inf)	<0.001
<i>Vignyanam Vyavasayena</i>	1.36	0.72	47.05	0.63	0.50	0.15	4.183	0.002
<i>Medha Grahanena</i>	1.36	0.73	46.32	0.64	0.50	0.15	4.183	0.002
<i>Smriti Smaranena</i>	1.91	0.91	52.36	1.00	0.00	0.00	(+inf)	<0.001
<i>Upadhi Anubandhanena</i>	1.27	0.64	49.61	0.64	0.50	0.15	4.183	0.002
<i>Sandnya Namgrahanena</i>	0.91	0.54	40.65	0.36	0.50	0.15	2.390	0.038

**Table-2. Effect of therapy on *Agnibala*:**

<i>Agnibala</i>	Mean		%	Mean Diff.	Diff. SD	Diff. SE	t value	p value
	BT	AT						
<i>Jaranashakti</i>	2.18	1.36	37.61	0.81	0.60	0.18	4.500	0.001
<i>Abhyavaranashakti</i>	2.00	0.90	55	1.09	0.53	0.16	6.708	<0.001
<i>Ruchi Aharakale</i>	2.63	0.72	72.62	1.90	0.94	0.28	6.708	<0.001
<i>Vata Mutra Pureesha retasam mukti</i>	1.36	1.00	26.47	0.36	0.50	0.15	2.390	0.03

**Table-3: Effect of therapy on Dehabala:**

<i>Dehabala</i>	Mean		%	Mean Diff.	Diff. SD	Diff. SE	t value	p value
	BT	AT						
<i>Bala vridhhi</i>	2.63	1.00	61.98	1.63	0.67	0.20	8.050	<0.001
<i>Bala swara varna yoga</i>	1.27	0.54	21.26	0.73	0.47	0.14	5.164	<0.001
<i>Shareera Upachaya</i>	1.00	1.18	0	-0.18	0.40	0.12	-0.49	0.167

**Table-4: Effect of therapy on Satvabala:**

<i>Satvabala</i>	Mean		%	Mean Diff.	Diff. SD	Diff. SE	t value	p value
	BT	AT						
<i>Nidra Labho Yathakulam</i>	1.63	0.36	77.91	1.27	1.10	0.33	3.825	0.003
<i>Sukhenach pratibodhana</i>	3.64	1.82	50	1.82	1.40	0.42	4.303	0.002
<i>Vaikarikanam swapnam adarshanam</i>	2.00	2.00	0	0.000	0.00	0.00	0.000	1.000
<i>Mano-buddhi indriyanam avyapti</i>	2.64	1.64	37.87	1.00	0.44	0.14	7.416	<0.001

**Discussion:**

In DAT there will be impairment of cognitive function. In Ayurveda learning or acquisition of knowledge is a result of successive complex interaction with coordination of Atma, Indriyas (cognitive organs), Mana (psyche) and Indriyarth (sense organs).<sup>[8]</sup> The functioning of these factors is maintained by Tridosha and Triguna in a specific coordination and balance.<sup>[9]</sup> In a nutshell symptoms of DAT can be correlated with the vitiated Prana, Udana, Vyana Vata, Sadhaka Pitta, Avalambaka and Tarpaka Kapha, Rajas and Tamas Doshas which are involved. So treatment modality should act on this doshas. *Medhya Rasayana* is the group of medicines which have numerous benefits especially it improves the memory and intellect by its *prabhava*. *Grahana shakti* (power of acquisition), *Dharana shakti* (power of retention) and *Smriti* (power of recollection) all three are included in *Medha*.<sup>[10]</sup> *Medhya property is Prabhava janyakarma* i.e. action applied due to the amalgamation of *Panchamahabhoota* in exclusive way to the specific *dravyas* purely and not by similar *Rasapanchakas*. These drug act at level of *Rasa* to stimulate the function of *Agni* and

improves circulation of the *rasa* by opening and cleansing the *srotas* leads to improvement in *Medhya* function.<sup>[11]</sup>

**Action in Dementia of Alzheimer's type:**

*Centella asiatica* extract can impact the amyloid cascade altering amyloid  $\beta$  pathology in the brains, modulates components of the oxidative stress response that has been implicated in the neurodegenerative changes occurring in AD.<sup>[12]</sup> Study has proved that *Glycyrrhiza glabra Linn* exerts a protective effect against apoptotic neuronal cell death induced by  $A\beta$  fragments, major constituents of senile plaques.<sup>[13]</sup> *Tinospora cordifolia* possesses a memory enhancing property for learning as well as memory. It does the immune-stimulation and synthesis of acetylcholine, this supplementation of choline enhances the cognitive functions.<sup>[14]</sup> *Convolvulus pleuricaulis Chois* calms the nerves by regulating the body's production of the stress hormones, adrenaline and cortisol.<sup>[15]</sup> Also showed significant improvement in learning and memory<sup>[16]</sup> & possesses significant antioxidant activity.<sup>[17][18]</sup>

**Probable mode of action of *Medhya Rasayana Churna* (MRC):**

*Medhya Rasayana Churna* promotes the function of *Manas* by correcting the disturbances of *Rajas* and *Tamas gunas*. *Medha* is the *karya* given to *Prakrita pitta*. *Guduchi*<sup>[19]</sup>, being *Madhura vipaka* and *Ushana virya* enhanced grasping power as its constitution is useful for *Pitta karma*, especially *Sadhaka pitta*. By *pachana karma*, it stimulates neuronal functions. It is useful in better memory registration and retention by action on *kapha*. *Mandukaparni*, *Yashtimadhu* & *Shankhapushpi* by its *Madhura vipaka* and *Sheeta virya*<sup>[20]</sup>, improved the function of *Tarpaka kapha* residing in *shira*.<sup>[21]</sup> It provides nourishment and protection to centers of sense organs in the brain.<sup>[22]</sup> *Dhriti* i.e. memory retention capacity occurred as drugs possess *Sheeta virya*. After lunch, there is stimulation of *Vyana vayu* and after dinner of *Udana vayu* which accelerate the activity of MRC to enhance the strength of the upper part of the body.<sup>[23]</sup> *Goghrita*<sup>[24-25]</sup> and *Madhu*<sup>[26-27]</sup> as *Anupana* was useful to increase palatability and bioavailability of MRC. It modifies *Agni* by correcting abnormalities related with digestion and metabolism due to tranquilizing effect (Table-2). The drug has done remarkable improvement in physical strength and luster of voice and complexion (Table- 3), by virtue of its *Rasayana* property to nourish the *dhatu*s.<sup>[28]</sup> *Medhya Rasayana* is acting specifically on *Manas* and *Indriyas* to impart better sensory modalities. The *Rasayana* effect enhances the feeling of well-being (Table-4). It nourishes the *Ojas* due to Immuno-stimulation action. Thus this *Rasayana* is beneficial in Dementia of Alzheimer's type.

**Conclusion:**

*Medhya Rasayana Churna* exerted better improvements in outcome measure in DAT. Due to *Medhya*, *Dipana*, *Pachana*, *Srotoshodhaka* properties it helped in improvement in *Manas bhava*, *Agnibala*,

*Dehabala* and *Satvabala*. Due to neuro-protective, brain growth promoter, anti-seizure activities and Antioxidant properties helped for subsiding neurodegenerative changes that occur with DAT and also accelerated repair of damaged neurons. Thus it is concluded that this *Rasayana* is beneficial in Dementia of Alzheimer's type.

**Limitation of study:**

Similar study using large sample and longer period can be tried to evaluate the prophylactic efficacy of *Medhya Rasayana Churna*.

**Acknowledgement:**

Authors duly acknowledge all the patients for their continued cooperation throughout the study.

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**Conflict of interest:** Author declares that there is no conflict of interest.

**Guarantor:** Corresponding author is guarantor of this article and its contents.

**Source of support:** None

**How to cite this article:**

Ghadage PA, Gupta K, Niranjan Y. Management of Dementia of Alzheimer's type (DAT) with Medhya Rasayana Churna- Short communication. Int. J. AYUSH CaRe. 2021; 5(4):359-364.