



“Role Of A Rasayana Therapy In The Management Of Neurodegenerative Diseases W.S.R. To Neuroprotective Effect Of A Ghruta.”

Dr. Varsharani Arjun Chaudhari¹.

Dr. Santosh Ramdas Niphade².

Dr. Sunita Parmeshwar Bhusare³.

Dr. Popat V. Jagtap⁴.

1. Associate. Prof. Department of Kayachikitsa , SMBT Aayurved College, Dhamangaon Nashik.
2. Associate. Prof. Department of Rasa Shastra & Bhaishajya kalpana, RJS Aayurved College, Kopargaon, Ahamadanagar.
3. Associate. Prof. Department of Rasa Shastra & Bhaishajya kalpana, SMBT Aayurved College, Dhamangaon Nashik.
4. Professor, Department of Kayachikitsa SSA Mahavidyalaya, Nashik.

Abstract:- Neurodegenerative diseases are slow progressive and irreversible neurological disorders characterized by the death of a Central Nervous Systems cells Neurons & Axons. Neurodegenerative diseases affect millions of people worldwide. Alzheimer's Disease and Parkinson's Disease are the most common Neurodegenerative diseases. Currently no treatment option available which Slow down the disease Progression and there is no Known Cure for these diseases. It reflects the need to develop new approach for Prevention and Treatment of a such Neurodegenerative diseases. Ayurveda provides a treatment modality through Prevention, Maintenance and Promotion of health with use of a Rasayana therapy. Ghuta is one of best Rasayana drug. It has Tridoshghna, Vishaghna properties. Gruta help in enhancement of Memory, Wisdom and so may called as a Medya Rasayana. Ghruta belong to bioorganic compound Lipids. It is reach source of a PUFA, Omega 3 Fatty Acids and DHA. These all are the major component of brain tissues. As Ghruta is a Lipophilic substance it easily crosses the Blood-Brain –Barrier ‘ BBB’. Thus the Ghruta & Medicated Gruta is able to reach up to the tissues of CNS. This clarifies the better efficacy of Neuroprotective effect in the form of Ghruta. With this consideration we can use Ghruta and medicated Ghruta in the management of Neurodegenerative diseases. In this article Ghruta is referred as a Go-Ghruta prepared by traditional method.

Keywords:- Neurodegenerative diseases, Ghruta, Neuroprotective effect, Alzheimer's Disease, Parkinson's Disease.

Introduction:-

Cognition and behavioral functions are the most important and complex functions performed by the human Brain. Cognition also known as Intellectual functions would include many domains such as Memory, Language, Orientation, Attention, Praxis, Calculation and Executive functions like planning, logic, judgment, insight and abstract thinking.

Derangement of cognition and behavioral functions may lead to disease state and foremost important cause for these condition is Neurodegeneration .These diseases are called as Neurodegenerative diseases.. Neurodegenerative diseases are slow progressive and irreversible neurological disorders characterized by the death of a brain cells Neurons & Axons. Neurodegenerative diseases affects millions of people worldwide. Some of a neurodegenerative disease are

- 1) AD - Alzheimer's Disease.
- 2) DLB- Diffuse Lewy Body Disease.
- 3) FTLD- Frontotemporal Degeneration.
- 4) MSA- Multiple system Atrophy.
- 5) PD- Parkinsons Disease.

Out of all these Alzheimer's Disease and Parkinson's Disease are the most common Neurodegenerative diseases. Alzheimer's disease stands first in all. According to the study carried in 2012 the Incidence rate per 1000 person- years for AD was 11.67 % for those aged > 55 years and higher for those aged 65> years 15.54%.⁽¹⁾ Second most common Neurodegenerative disease is Parkinsons Disease. By the report in 2021, a study conducted in Gujarat state showed that crude population of PD was 42.3 per 100,000 and prevalence over the age 60 was 308.9 per 100,000 which showed the trends of increasing disease prevalence with advance age⁽²⁾. Currently no treatment option available which Slow down the disease Progression and there is no Known Cure for these diseases. It reflects the need to develop new approach for Prevention and Treatment of a such Neurodegenerative diseases.

Ayurveda provides a treatment modality through Prevention, Maintenance and Promotion of health with use of a Rasayana therapy. The medicine which invigorate a healthy person is called as Rasayana i.e. Rejuvenator⁽³⁾. Rasayana help in the maintenance of excellent Physical and Mental health. Ghruta is one of best Rasayana drug. Ghruta is Vata- Pitta Dosha hara, increases the essence of all seven Dhatus upto Oja, helps to enhance the quality and quantity of Bal & Varna. It helps to increase the Memory and intellectual of person. So can be used as a treatment modality as a Rasayana therapy in neurodegenerative diseases.

Here we are looking for most common neurodegenerative diseases the AD and PD only.

Aim:- “To review a Literature for the role of Rasayana Therapy in the management of Neurodegenerative Diseases with special reference to Neuroprotective effect of Ghruta”.

Material & Methods:- Classical text books of Ayurveda, Modern textbooks and research work available related to topic from authentic sources of internet.

- 1) Charak Samhita
- 2) Sushruta Samhita
- 3) Ashtanghudaya Samhita
- 4) Sharangdhara Samhita.
- 5) Bhavprakash Nighantu

- 6) Bhaishajya Ratnavali
- 7) API text book of Medicine.
- 8) Scholarly articles from authentic sources of internet .

Observations:-

Common causes of Neurodegenerative Diseases:-

- 1) Age- Advance age is the most common cause.
- 2) Genetic Causes- Mutation in the Mitochondria and gene.
- 3) Environmental Factors- Air pollutants, Pesticides, fungicides, insecticides, chemical used in industries⁽⁴⁾.
- 4) Dietary & Lifestyle factors- Caffeine, tobacco smoke, less amount of dietary antioxidants⁽⁴⁾.
- 5) Inflammation- Bacterial and Viral infection of CNS.
- 6) Autoimmunity- Inflammation to brain cells due to autoimmunity like Multiple Sclerosis, ALS- Amyotrophic Lateral Sclerosis etc.
- 7) Oxidative Stress- contributes to neurodegeneration.
- 8) Brain Injury- traumatic and Cerebrovascular accidents.

The most cause of a Neurodegenerative disease are multifactorial in which interaction between external environment and internal genetic factors act cumulatively over a life time to determine the ‘Allostatic load’ of an individual.⁽⁵⁾ These causative factors alone or with gene affects the process of neurodegeneration and causes Neurodegenerative diseases .

1] Alzheimer’s Disease: - The etiology of AD is not understood clearly yet. Pathophysiology of AD includes⁽⁶⁾-

- a) Increased concentration of aggregated AB42 proteins in brain cells called as ‘Amyloidogenesis’. Amyloid plaques are deposited in intraneuronal tissues which is the toxic degradation product of the amyloid precursor protein.
- b) Abnormal fibrous inclusion called Neurofibrillary tangles- NFTs. These NFTs consist of aggregates of hyperphosphorylated tau proteins. Tau molecules are dissociated from microtubules and become insoluble fibrous tangles. These NFTs accumulates in axons & dendrites causing degeneration of neurons.
- c) Mitochondrial dysfunction- Mitochondria present in every cell are critical regulators of cell death and thus has a central role in ageing related neurodegenerative diseases.
- d) Oxidative Stress- OS forms the free radicles which are responsible for the immature destruction of brain cells.

All these factors plays vital role in the formation of neurodegenerative disease like AD. Due to neurodegeration there is reduce synthesis of Acetylcholine (Ach) which is a neurotransmitter. Neurodegeneration and reduced Ach results in a bunch of symptoms called AD.

According to the onset of AD it is of a two type –

- 1) Early Onset AD- EOAD. Begins between 30s and mid 60s.
- 2) Late Onset AD- LOAD. Appears in mid 60s.

Clinical Manifestation of AD:- Forgetfulness or problems of memory are typically one of the first sign of cognitive impairment related to AD. Some may diagnosed with Mild Cognitive Impairment MCI.

MCI- Not everyone with MCI progress to formation of disease AD. Patient can take care of themselves and able to do their normal activities.

- 1) Losing their thing.
- 2) Forgetting to go to events / appointments.
- 3) Having more trouble coming up with words than other people of the same age.

Stages of AD:- Mild, Moderate and Severe are the stages of AD according to the sign symptom presents⁽⁷⁾.

Sr.No.	MILD AD	MODERATE AD	SEVERE AD
1	Memory loss	Increased memory loss and confusion	Inability to communicate
2	Poor judgment leading to bad decision	Inability to learn new things	Weight loss, seizures, groaning.
3	Loss of spontaneity & sense of initiative	Difficulty with language	Increased sleeping
4	Taking longer time to complete daily tasks	Difficulty with reading, writing & Working with numbers	Loss of bowel and bladder control.
5	Repeating questions	Difficulty organizing thoughts & thinking logically	-
6	Trouble handling money & preparing bills	Shorten attention span	-
7	Wandering and Getting lost	Difficulty in carrying out multiple task such as getting dressed.	-
8	Losing things or misplacing them in odd places	Hallucinations, delusions, paranoia	-
9	Mood and personality changes	Inappropriate outburst of anger	-
10	Increased anxiety and /or aggression	Restlessness, agitation, anxiety, tearfulness.	-
11	-	Wandering- especially at evening time	-
12	-	Repetitive statements or movements	-
	Often Diagnosed At This Stage	Needed Supervision	Become Completely Dependent On Others

Treatment of AD:- Treat potentially treatable comorbidities, disease modifying pharmacological treatment and Non-pharmacological treatment are the modalities for the management of AD. Unfortunately disease modifying treatment for AD is still under research. So new modalities with Ayurveda drug of choice can be used based on the principle of treatment according to Ayurveda.

2] Parkinsons Disease /PD:- Exact etiology is unknown still one of important cause of formation of PD is neurodegeneration. Selective loss of neurons in the Substantia Nigra of Mid brain due to degeneration is formed. Proteinaceous inclusion bodies called ‘Lawy bodies’ are present in affected area . It results in reduction of Dopamine production and develops PD⁽⁸⁾.

Clinical Manifestation of PD:-

Sr.No.	Clinical Manifestation of PD
1	Resting tremors
2	Bradykinesia or akinnesia
3	Rigidity of muscles
4	Mask like face
5	Slow and Shuffling/ Freezing gate
6	Indistinct voice/ Slurred speech
7	Micrographia
8	Postural abnormalities
9	Affected daily activities- walking, getting dressed, depression

Treatment of PD:- Dopamine agonist Levodopa is the drug of choice for PD. But it has no effect on neurodegeneration. Chronic treatment with L-dopa often causes motor and psychiatric side effects.

After overview of modern reference of Neurodegenerative diseases AD & PD we came to know that; currently no treatment option available which Slow down the disease Progression and there is no Known Cure for these diseases. It reflects the need to develop new approach for Prevention and Treatment of a such Neurodegenerative diseases. So we can look positively towards the Ayurveda for the prevention and treatment of such diseases.

Ayurveda Management Of Neurodegenerative Disease With The Help Of Rasayana Therapy W.S.R. To Ghruta:-

Rasayana therapy is the special treatment modality explained in Ayurveda samhitas. It help to prevent, treat and avoid recurrence of disease. Ghruta is one of a best Snhehana drug⁽⁹⁾ and used as a Rasayana. Cow ghruta/Goghruta is best in all types of ghruta and suggested for medicinal use. Goghruta balances Vata-Pitta Dosha vitiation, Increases the all Dhatus from Rasa to Shukra upto Oja . It enhances the quality of Swara, Varna. The sage of Ayurveda Aacharya Vagbhata had said that, the person who want to enhance the Dhi-Smruti- Medha

i.e. /Intellectual ,Memory and wisdom; should consume the Ghruta⁽¹⁰⁾. Ghruta has Vishaghna/ anti-toxin and Vayasthapana/Anti aging effect⁽¹⁰⁾. So far with reference of Ghruta; Goghruta is considered here.

According to modern science Ghruta/clarified butter is a Fat molecule which contains 62% of Saturated and rest are Poly Unsaturated fatty Acids. Ghruta is best source of Poly Unsaturated fatty Acids/PUFA out of all fat molecules. Ghruta is lipophilic substance. The membrane separating the tissues of Brain and circulating blood is called as a Brain-Blood- Barrier/BBB which is lipophilic in nature. Thus it selectively permits the passage of lipids and lipid soluble drugs across the BBB. Therefore any drug given in the form of Ghruta preparation will not only be processed and absorbed fast but also able to reach some of the most hard to reach tissues of the body like Brain.⁽¹¹⁾

Polyunsaturated fatty acid Omega 3 and DHA are the structural and functional molecules of brain cells. Ghruta repaired by traditional methods contains PUFA, Omega 3 Fatty Acids and DHA- Docosahexaenoic fatty acids in sufficient amount⁽¹²⁾. PUFA has a neuroprotective action as it passes BBB. Omega 3 one of a PUFA has been associated with anti-inflammatory pathway. DHA has anti oxidative activity⁽¹³⁾. Therefore these three contents help to protect the normal structure and function of brain cells. Surprisingly ghruta contains all these three molecules. Thus can be used as a neuroprotective agent for the prevention and treatment of Neurodegenerative diseases.

Neuroprotective Action Of Ghruta:-

When we go through the causes of Neurodegenerative diseases we can define the Neuroprotective action of Ghruta. As age increases the Vata-Pitta dosha increases naturally and both Doshas are responsible for the process of degeneration and aging. Ghruta has property to reduce the vitiation of Vat-Pitta dosha thus slow down the process of degeneration. Therefore it is called as Vayasthapan/Antiaging. So if Ghruta is used in advancing age, will help to limit the process of degeneration and neurodegeneration.

Due to environmental factors like pollutants and pesticides ; change in mitochondrial structure and mutation of gene occurs which is one of the cause of a Neurodegenerative diseases. Ghruta has Vishaghna/Anti toxin effect. Due to consumption of such toxins Pitta-Vata Dosha get increased in body and accelerate the process of degeneration. Because of its Vishaghna/Anti toxin effect, Ghruta neutralizes the effect of toxins and thus will help to eliminates the effect of environmental factors on the gene mutation and slow down the neurodegeneration process.

Ghruta is Shita and Vata-Pitta Dosha demulcent in nature. Has some anti-inflammatory effect also. It will slow down the process of inflammation, and will help to reduce the rate of neurodegenaration due to inflammatory process of brain cells like infection or autoimmunity.

Ghruta is good antioxidant and thus will help to reduce the Oxidative stress and related process of neurodegeneration. All these properties of Ghruta will help to reduce the cause of accumulation of AB 42 protein, NFTs in brain cell and might be reduce the rate of nerodegeneration in AD. As Ghruta is best source of Omega 3 PUFA and DHA it provides sufficient amount of these elements to brain cells and may help in protection of neurons in Substantia nigra and may reduce the rate of neurodegeneration and acceleration of PD.

Properties Of Ghruta:-

Sr.No	Modern Aspect	Ayurveda aspect	How Ghruta help in slow down the rate of neurodegeneration process.
1	Rich in Omega 3 fatty acids	Vata-Pitta Dosha shamak/demulcent	Anti inflammatory
2	Good source of PUFA	Shita in nature and Vata-Pitta Dosha demulcent- Medhakar/increases wisdom	Crosses BBB and rich upto brain cells and allows entry of neuro protective substances.
3	Has DHA	Dhi Vrudhhi/ increases intelectual	Slow down the rate of death of Mitochondria of every cell respectively brain cells also.
4	Anti oxidant	Vishaghna/anti toxin effect	Reduces oxidative stress.
5	Omega 3,PUFA,DHA	Vayasthapan/Anti aging and Smrutikara enhance memory	Help in maintenance of basic structure and function of brain cells

Over all with the properties like Dhi-Dhruti-Smrutikara, Vishaghna and Vayasthapan properties of Ghruta it will act as a best neuro protective and thus Rasayana drug in Neurodegenerative diseases.

Rout of administration of Ghruta for Neurodegenerative diseases:- According to the sage of Ayurveda the Sneha like Ghruta can be administered with the help of different routs like⁽¹⁴⁾ -

- 1) Snehapana- oral administration
- 2) Anapana- with food articles
- 3) Basti- Medicated enema with Ghruta
- 4) Nasya- Nasal administration
- 5) Karnapuran- Filling of middle ear with Ghruta
- 6) Netra tarpana- Libation of eyes with Ghruta
- 7) Shirobasti- Donning of Ghruta on head.

All these routs can be used in Neurodegenerative diseases.

Medicated Ghruta for Neurodegenerative diseases:- Ghruta has ‘Sansankaranuvartan’ property. When Ghruta is processed with other medicinal drugs without losing its own properties Ghruta blends with the properties of that specific drug and thus increases its potential effect- Sansankaranuvartan . In Ayurveda texts numerous medicated Ghruta are explained which has properties to enhance the memory and intelectual. These ghrutas can be used in Neurodegenerative diseases. Following are some examples of medicated Ghruta for the use in Neurodegenerative diseases like Ad and PD.

Aamlaka Ghruta,Kalyanak and Mahakalyanak Ghruta, Bramhi Ghruta, Vachadi ghruta, Jivaniya Ghruta, Ashtang Ghruta, Sukumar Ghruta and many more. The medicines used in the formation of such Ghrutas has very good effect on brain cells. They act as a Dhi-Dhruti-Smrutikar for neurodegenerative diseases. And thus may help to enhance the intellectual and memory in AD and PD.

Conclusion:-

With the review of above literature study we can conclude that Ghruta has some neuroprotective effect and can be used in Neurodegenerative diseases. So long term and continuous use of Ghruta may help in the prevention of Neurodegenerative diseases. It can be used to maintain the overall health and brain functions. So the use of Ghruta will surely help to promote the health in Neurodegenerative disease patients like AD and PD. It can be act as a best Rasayana Drug and Neuroprotective agent in Neurodegenerative diseases.

Limitation Of Study:-

Here only literature review about the properties of Ghruta according to Modern and Ayurveda science available literature was done. Whatever said in classical texts should be researched with the help of modern science and techniques.

Further Scope Of Study:-

The clinical trials with short and long term use of above mentioned Ghruta preparation should be carried out for its Neuroprotective effect on the basis of modern medical science parameters. Also the different dose , time duration and different rout of administration should be studied for the safety and efficacy of these Ghruta preparations. So the better treatment option will be available for the prevention, maintenance and treatment of Neurodegenerative diseases with the help of Rasayana therapy of Ayurveda w.s.r.to Use of Ghruta.

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