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# A Review on the Role of *Naladadi Ghrita* (A Polyherbal Medicated Ghee) in the Management of *Jarajanya Medhakshaya* (Age Related Deterioration of Intellect)

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## ABSTRACT:

Ageing and related ailments especially mental health conditions imparts a greater burden in elderly population. Age related dementia including both memory loss and cognitive impairment is a leading contributor of disability. Due to the concern over safety of available pharmacological therapies many people with dementia turn to complementary medicine. Ayurveda, the Indian system of medicine recognises this condition as *Medhakshaya* (deterioration of intellect) and has given much emphasis on drugs which will promote *Medha*. Several *rasayana* drugs in ayurveda are primarily claimed as *medhya* since they have the ability of mental upliftment. *Naladadi ghrita* is such a formulation described in *rasayana prakarana* of *Ashtanga hridaya* and in this review we tried to analyse individual drug action and their synergetic action. Role of drugs in neuroprotection, learning and memory was analysed by electronic database search. And drugs were also reviewed by ayurveda parameters. Results of the review revealed the role of individual drugs in digestion and various brain functions. combination of drugs may produce an extra therapeutic effectiveness by synergism and can be utilised for the treatment of various CNS disorders including *jarajanya medhakshaya.*

**Keywords:** Ageing, Dementia, *Ayurveda, Rasayana*, Neuroprotective Agents, Herbal Medicine

## INTRODUCTION

India has experienced a dramatic demographic transition in the past 50 years with a tripling of the population over the age of 60 years[1] and is expected to reach 158.7 million in 2025 [2]. An analysis of morbidity patterns by age indicates that the elderly experiences a greater burden of ailments compared to other age groups[3] and mental health conditions play a significant role in their morbidity and premature mortality[4]. Ageing being a risk factor for neurodegenerative disorders contributes to the

development of dementia in a large number of people[5]. Among all neuropsychiatric conditions, dementia is a leading contributor of disability in the elderly and these shifts in the paradigm may affect the prevalence of dementia in India[6]. A study on the prevalence of cognitive impairment and dementia in community-dwelling Indians from Singapore reported that among elderly Indians the overall prevalence of any cognitive impairment is 24.6% including 1.2% of dementia[7]. Memory loss in elderly will raise concern over cognitive abilities or to general cognitive decline, and not just memory even though some degree of cognitive slowing is a part of normal aging[8]. They can't transform information quickly to make a decision which shows impairment in speed of processing, working memory, and executive cognitive function[9]. But the safety and long-term therapeutic benefits of currently available interventions remain uncertain and due to these unsatisfactory pharmacological therapies, many people with dementia and cognitive impairment turn to complementary medicine. Present era witnessed a tremendous urge to explore medicinal plants globally for improving cognitive function owing to their less adverse effects. Also, CNS acting drugs are highly dose dependant and always tends to result with addiction accompanied with withdrawal symptoms.

Concept of ageing (*jara*) including changes in body and mental functions is beautifully described in classics of *Ayurveda*. Age(*vaya*) is divided into childhood (*balyam*), middle age(*madhyam*), and old age (*vridha*) and Acarya Charaka mentioned that cognitive functions like power of understanding (*grahana*), power of retention(*dharana*), power of memorizing (*smarana*), speech (*vachana*), and functions of sense organs get affected in old age[10]. *Sarangadhara samhita* clearly emphasizes that intellect (*medha*) and wisdom (*buddhi*) start to deteriorate between the fourth and ninth decades of life[11]. Being a holistic science *Ayurveda* gives equal importance to body and mind in health and disease. *Ayurvedic* principles pointed out the coexistence of body(*sarira*), sense organs (*indriya*), mind (*sattva*) and soul(*atma*) as *ayu* and the main motive of *Ayurveda* is the protection of *ayu*[12]. *'Medha'* means intellect or retention and ayurvedic classics used this word synonymously with *buddhi, smrti* and *dhi* to denote *grahana sakthi* (grasping power) and *dharana Shakti* (retention power)[13]. It provides the power to obtain the knowledge of existing object. *Medha* can be particularized as an individual's specific intellectual ability to retain a large amount of knowledge (cognition) and for a long time[14]. *Medha* affects the happiness or misery of the *'ayu*. So, protecting *medha* is essential for fulfilment of motive of *ayurveda*. Among major disabilities faced by elderly, deterioration of memory and learning has considerable impact on their health. Ayurveda recognises this condition as *medhakshaya* (deterioration of *medha*). Acharyas has given much emphasis on drugs which will promote *medha (medhya dravyas).* Though *medhya karma* is related to *manas*, its specific concern with nervous system is undoubtful which is considered as a *prabhavajanya* [15]They can be utilized for the prevention and treatment of *medhakshaya.* Several medicinal plants mentioned as *rasayana* drugs in *ayurveda* are primarily claimed as *medhya* since they have the ability of mental upliftment[16]. Descriptions about various *rasayanas* in the form of rejuvenative recipes, dietary regimen, special health promoting behaviour and drugs can be seen in authentic *ayurveda* text books. Properly administered *rasayanas* can provide longevity, memory, intelligence and freedom from diseases. They are classified on the basis of benefit, method of use, or material used and *aushadha rasayanas*(drugs) plays a major role in *rasayana chikitsa* . Some of the *aushadha rasayanas* are organ and tissue specific and those specific to brain tissue are called *medhya rasayana*. They will help to retard brain aging and helps in regeneration of neural tissues besides producing antistress, adaptogenic and memory enhancing effects[17]. Powder of *Glycyrrhiza glabra* Linn *(yashtimadhu churna),* juice of *Centella asiatica* (L.) Urb. *(mandukaparni swarasa),* paste of *Convolvulus pleuricaulis* Choisy *(shankhapushpi kalka)* and Juice of *Tinospora cordifolia* (Willd.) Hook.f. & Thomson *(guduchi swarasa)* are advised to use as *medhya rasayana* by acharyas[18].Apart from these single drugs many polyherbal formulations are described in *Ayurveda* classics which will perform *medhya karma*. *Naladadi ghrita* is such a formulation described in *rasayana prakarana* of *Ashtanga hridaya* and widely used medicine in Kerala. It contains around 17 herbs and *Convolvulus pleuricaulis* Choisy (*Shankha pushpi*) is the major ingredient[19] Gupta and Mamidi reported that *Naladadi ghrita* is effective in the management of ADHD in children. They have observed a significant improvement in ADHD rating scale in children[20]. This review is an attempt to analyse the role of *Naladadi ghrita* in the management of *medhakshaya* due to ageing.

## MATERIALS AND METHODS

Organized collection of data from classical text books of Ayurveda and electronic databases (pubmed and google

scholar). Ayurvedic literature relating to the formulation and ingredients of *Naladadi Ghrita* is collected from *samhithas and nighantus*. Botanical sources were identified from Indian Medicinal plants, a compendium of 500 species. Pharmacological evaluations conducted with the part used and phytoconstituents of individual drugs were collected from the research articles available online mainly through PubMed search engine. Ingredients of *Naladadi ghritam* as per Indian Medicinal Plants Vol (1-5)[21](Table 1)

**Indications[22]**

1. By regular intake of this *ghrita*, even mute or retarded persons will become talkative which indicates its action in areas of speech (*Jado api Vagmi Bhavet*)
2. Regular use of this also improves the ability to understand, capacity to retain memories, ability to analyze and draw logical conclusions *(Srutadhari)*
3. Enhance the intellect and make a person more creative. *(Pratibhavan)*
4. Regular us will improve general health. *(Aroga)*

**Method of preparation.** As per the general method, paste of drugs(*kalka)*, ghee(*ghrita*) and liquids(*kwatha/swarsa*) will be taken in a ratio of ¼:1:4 and will cook until it attains *paka lakshanas[24]*.Here as per the textual reference, 1 *athaka* of ghee (approx.2.56 kg) will be mixed with 10.24 kg of *sankhapushpi swarasa* and milk each. Then 0.64 kg of *kalka* prepared with the remaining ingredients will be added to this mixture and will be cooked in mild fire till *paka lakshana.*

**Dose** -General dose for *snehakalpana* is 1 *pala[25]*. But there are various factors to be considered before deciding the dose of a drug. Acharya Caraka stated that the standard dose of a drug is suited for young person(*madhyamavastha*)[26]. Sarngadhara elaborated the same by mentioning the age specific doses for powder(*churna*), paste(*kalka*) and decoctions(*kwatha*)[27]. Apart from this strength of the patient and disease, digestive power, bowel, sex, power of drug etc are also the determining factor for dose[28]. So, the dose of *Naladadi ghrita* should decide considering all these factors since there is no specification of dose in the textual reference.

**Pharmacological Properties (*Rasadi Gunas*) of the drugs from various Nighantus[29] (Table 2)**

It is difficult to explain the effect of all *medhya* drugs since they show varied properties. *Nagarjuna* opined that the *medhya dravyas* acts by their *achintya veerya (prabhava*). They may act at level of *rasa, agni, and srotas*. They may stimulate and improve the function of *agni[30]*. Researches reported the role of digestion and metabolism in control of brain function. Since brain consumes an immense amount of energy relative to the rest of the body, the mechanisms that are involved in the transfer of energy from foods to neurons are likely to be fundamental to the control of brain function. Several gut hormones have been found to influence emotions and cognitive processes[31,32] , Some dietary components have been identified as having effects on cognitive abilities[33,34]. , At level of *Srotas*, they may improve the circulation of rasa by opening and cleaning the micro channel and then ultimately improve the function of *Medha*.

As per *Ayurveda* principles, action of a *dravya* is decided by its *rasapanchaka* which are ultimately different combination of *panchamahabhootas*. They possess characteristics of *satva*, *raja* and *tama*. Since *medha* is attributed to predominance of *satva guna*, *akashiya taijasa* and *apya dravyas* having *satva guna* predominance will improve *medha*. Analysis of *rasapanchaka* of *Naladadi ghrita* revealed *madhura, tikta* and *katu* rasa predominance in the ingredients. They are either *madhura* or *katu* in *vipaka*. *Tikta rasa* has a direct action on the promotion of *medha*. It performs their function by its *laghu guna*, *deepana-paachana* and *srotosodhaka karma*. Bitter substances are reported to possess potent effects to stimulate the secretion of gastrointestinal hormones and modulate gut motility[35]. Studies reported humans have bitter taste receptors (25 T2Rs) that are expressed in the oral cavity, gastrointestinal and neuroendocrine cells[36].*Madhura rasa* also by promoting the formation of *oja* nourishes *indriyas*,*manas* and *medha*. *Katu rasa* pocess *deepana* and *pachana* property. It dialates channels (*srotosodhana*). *Seeta veerya* and *mahura vipaka* promotes *kapha* and enhances *dharana karma*. *Ushna veerya* and *tikta rasa* promotes *pitta* and enhances *grahana* and *smarana* (ie grasping power and memory)[37]. *Sankhapushpi* (*Convolvulus pleuricaulis* Choisy) is the main ingredient of *Naladadi ghrita*. *Acharyas* explained the *medhya karma* of this plant in various classics and it is said to be superior to other *medhya dravyas*. Hypotensive and tranquilizing effects of the plant is evident from various pharmacological studies. And some clinical studies have shown its beneficial effects in anxiety neurosis[38]. *Nahata A etal* reported a significant improvement in learning and memory in rats after treatment with ethanolic extract of *Convolvulus pleuricaulis* Choisy(CP)[39]. A study

by Jai malik reported neuroprotective activity of CP Extract against 3-NP-induced neurotoxicity and can be further explored for its efficacy against Huntington's disease[40]. Phytochemical evaluation of the plant revealed the presence of Kampferol, a natural flavonol which pocess a wide range of pharmacological activities including neuroprotective and anxiolytic activity[41].

*Nalada (Nardostachys jatamansi* DC) is an ingredient of various Ayurveda formulations and acharyas explained its *medhya karma*. This plant has been claimed to possess antidepressant[42], sedative[43], antiparkinsonian[44] and memory enhancing activities[45].Studies reported significant improvement in learning and memory in young mice after treatment with ethanol extract of the plant. They also reported reversal in aging-induced amnesia of mice. Administration of powdered roots daily for one month showed statistically significantly improvement in latency to falling asleep, duration and undisturbed restful sleep in Indian patients with primary insomnia of up to 5 years duration[46]. *Rucker G etal* reported that one active sesquiterpene in this plant named valeronone exhibits activities typical for tranquilizers[47].

*Madhuka (Glycyrrhiza glabra* Linn) is an important ingredient in many ayurvedic formulations. *Parle M etal* reported a significant improvement in learning and memory in mice after pre-treatment with aqueous extract for 7-days[48]. Also a reversal in scopolamine-induced amnesia[49], decrease in brain AChE activity[50], and production of antidepressant-like effect[51] were reported. Various studies reported significant enhancement in spatial memory retention[52] and learning[53] by pretreatment with its aqueous extract. Glycyrrhizin, a saponin present in this plant is one of the most potent hydroxyl radical scavengers[54] Antioxidant activity[55], Nootropic activity[56],Anxiolytic activity and neuroprotective effect [57]of *Pureria tuberosa* DC is reported. *Shete R V etal* demonstrated the nootropic effect of *Hemidesmus indicus* (L.) R. Br. ex Schult[58]

Antioxidant activity of various extracts of *Vacha (Acarus calamus* Linn) in different oxidative-stress models has been reported[59,60,61].Coadministration of the rhizome extract prevented restraint-induced cognitive impairment in rats[62].Ethyl acetate extract and a-asarone prevented noise stress-induced memory impairment in rats[63].Hypnosis-potentiating and hypotensive activities [64,65,66] of the plant is residing in its volatile oil with b-asarone as major constituent [67].Neuroprotective[68], Sedative, and respiraory depressive activities of the rhizomes are also reported[69]. Two bitter principles named acorin and acoretin are reported in this plant[70]. Studies reported a significant free radical scavenging capacity of methanol and aqueous extracts of *Katuka rohini (Picrorhiza kurroa* Royle ex Benth.)[71,72]. Studies reported a significant sedative effect in mice after treatment with sandal oil[73] and alpha and beta santalols are responsible for sedative effect of sandalwood preparations[74]. A clinical study reported significant subjective sedative effect by alpha santalol in healthy Thai volunteers[75] Invitro antioxidant activity of *Terminalia chebula* Retz is reported by various studies[76,77,78]

*Golechha M etal* reported memory enhancing, and antioxidant activity of hydroalcoholic extract of *Emblica officinalis* Gaertn. in scopolamine-induced cognitive impairment in mice[79]. Antidepressant-like effect in mice was observed by treatment with aqueous fruit extract[80] Pre-treatment of rats with hydroalcoholic extract improved cognitive deficit and ameliorated oxidative stress[81]. Gallic acid, methyl gallate, corilagin, furosin and geraniin were identified as the chemical constituents responsible for nitric oxide scavenging activity[82].

Ginger powder and juice is reported to provide protection from oxidative stress[83], lowers lipid peroxidation and maintains activities of antioxidant enzymes[84], protection against behavioural dysfunction and Alzheimer-like symptoms in rats[85]. Improvement in cognitive performance, memory impairment and antioxidant markers in cerebral ischemic rats[86,87] were also reported.

Studies reported that administration of methanol fruit extract of *Piper nigrum* Linn improved memory and exhibited anxiolytic and antidepressant effects in spatial memory impairment in rats[88,89].

Enhanced learning and spatial memory in aged rats [90]significant increase in recognition memory[91] and protection of brain against neurotoxic insults[92] by administration of *Curcuma longa* Linn were reported. Curcumin supplemented-diet improved age-related cognitive functions in rats[93] and significantly improved cognitive tasks, locomotor activity, oxidative defence in mice[94]. Curcumin also protected against acute ethanol-induced memory deficit[95] significantly reversed brain oxidative damage[96]. Berberine, a major alkaloid of *Berberis arista* sims is reported to possess antidepressant activity[97].

Ghee is mentioned as best suited for those desirous of dhi (intelligence), smrithi(memory) and medha by acharyas. It is said to be beneficial for mental alertness and memory in adults as well in children. When processed with appropriate medicines, its curative power is immense and

can be used in several diseases[98]**.** Acharya Vagbhata suggested daily intake of ghee before food for *vayasthapana*[99].Several ghee-based formulations are recommended by acharyas for the preservation and promotion of brain and neurological health especially in chapters dealing with *Unmada* and *apasmara*. These include *Kalyana ghrita, Mahakalyana ghrita, Mahapaishaachika ghrita, Brahmi ghrita,* and *Lashunadi ghrita*[100]. Ingredients of *Naladadi ghrita* contain many lipophilic terpenoids, flavanols etc. So, ghee medium will help to extract the maximum therapeutic properties of ingredients in to the formulation. Blood-brain barrier acts as a major obstacle to the delivery of drugs to the central nervous system. Membrane separating the central nervous system tissue and circulating blood is lipophilic. Thus, it selectively permits the passage of lipids and lipid-soluble drugs across it. Therefore, any drug given in the form of ghee will not only be processed and absorbed fast but also be able to reach some of the most hard-to-reach areas of the body like the CNS. This clarifies the better efficacy of various psychotropic drugs given in the form of ghee in CNS diseases[101].

Acharya Vagbhata added *Ksheera* as an ingredient in *Naladadi ghrita* . *Ksheera* is the best *jeevaneeya dravya* and its daily use is will do *rasayana karma*. *Goksheera* is said to be having *rasayana* property. Also, *balya, brimhana* and *kshayahara* properties of the *ksheera* could make it to use in *rasayana chikitsa.*

## DISCUSSION

Review of individual drugs of *Naladadi ghrita* revealed their role in digestion and various brain functions. *Madhura, katu* and *tikta rasa* predominant drugs by their nourishing role in the *indriyas* and *manas, deepana* and *pachana* properties and *srotosodhana* action helps to maintain the normal functioning of *doshas* and *anulonma gati* of *vata. Srotosodhana* action helps to normalise *manovahasrotas* also. Since regular use of this *ghrita* enhances physical health, it can be utilised as a nervine tonic. Researchers identified a relationship between enteric nervous system and neurological disorders[102]. Concept of gut-brain axis links emotional and cognitive centres of the brain with peripheral intestinal functions and importance of gut microbiota in influencing these interactions are evident from recent researches[103]. Studies has revealed a linking between several pathophysiological conditions with an impaired gut microbiome, the effects of which extend beyond the gut and in particular to the brain. This microbiome-gut-brain axis considerably affects neural function and pathophysiology like susceptibility to autism, neurodegenerative diseases[104]. Considering these factors, we can identify *Naladadi ghrita* as an ideal drug for various neurological conditions including Dementia, Parkinsons disease, Alzheimer's disease etc. Ayurveda system of medicine uses a single drug and polyherbal formulations for the treatment of various ailments. Use of polyherbal formulations dated back to the time of *acharya sarngadhara* and is said to be achieve extra therapeutic effectiveness. Scientific studies have revealed that combination of plants will produce a greater result as compared to individual use of the plant and also the sum of their individual effect through a positive herb-herb interaction known as synergism[105]. Hence combination of drugs of *Naladadi ghrita* also may produce an extra therapeutic effectiveness by synergism and can be utilised for the treatment of various CNS disorders including *jarajanya medhakshaya.*

## CONCLUSION

Satisfactory effect and safety of Ayurvedic polyherbal formulations making them one of the highly selected drugs of choice for treatment and prevention of various ailments. *Naladadi ghrita* is such a formulation indicated in *rasayana prakarnana* of *Ashtanga hridaya* and literature review of its individual drugs revealed its action on memory, learning and other neuroprotective activities. Correct and rational use of this formulation will help to prevent and treat various central nervous system disorders including *Jarajanya medhakshaya*.

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**Table 1 Ingredients of *Naladadi ghritam* as per Indian Medicinal Plants Vol (1-5)[21]**

| Drugs | Botanical name | Family | Part used |
|---|---|---|---|
| *Nalada* | *Nardostachys jatamansi* DC | Valerianaceae | rhizome |
| *Katukurohini* | *Picrorhiza kurroa* Royle ex Benth | Scrophulariaceae | rhizomes |
| *Payasya* | *Pueraria tuberosa* DC | Fabaceae | tuberous roots |
| *Madhuka* | *Glycyrrhiza glabra* Linn | Fabaceae | roots |
| *Chandana* | *Santalum album* Linn | Santalaceae | heartwood |
| *Sariba* | *Hemidesmus indicus* (Linn.)R.Br | Asclepiadaceae | roots,stem |
| *Vacha* | *Acorus calamus* Linn. | Araceae | Rhizome |
| *Haritaki* | *Terminalia chebula* Retz. | Combretaceae | fruits |
| *Vibhitaki* | *Terminalia belerica* Roxb. | Combretaceae | fruits |
| *Amalaki* | *Emblica officinalis* Gaertn | Euphorbiacaeae | fruits |
| *Sunthi* | *Zingiber officinale* Roxb | Zingiberaceae | rhizome |
| *Maricham* | *Piper nigrum* Linn | Piperaceae | fruits |
| *Pippali* | *Piper longum* Linn | Piperaceae | roots,dried spikes |
| *Haridra* | *Curcuma longa* Linn | Zingiberaceae | rhizomes |
| *Daruharidra* | *Coscinum fenestratum (Gaertan.) Colebr* | Menispermaceae | stem |
| *Patola* | *Trichosnthes cucumerina Linn* | Cucurbitaceae | wholeplant |
| *Saindava* | Rock salt | | |
| *Sankhapushpi* | *Convolvulus pleuricaulis* Choisy | Convolvulaceae | wholeplant |

**Table 2 Pharmacological Properties (*Rasadi Gunas*) of the Drugs from various Nighantus[29]**

| | *Rasa* | *Guna* | *Veerya* | *Vipaka* | *Doshaghnata* | *Karmas* |
|---|---|---|---|---|---|---|
| *Nalada* | *Tikta, Kashaya madhura* | *Laghu* | *Seeta* | *Katu* | *Tridoshanut* | *Medhya, balyam, balakantida* |
| *Katukurohini* | *Katu Tikta* | *Laghu Ruksha,sara,* | *Seetam* | *Katu* | *Kapha pttahara,* | *Dipana, Bhedini,Hridya, Jvarahara* |
| *Payasya* | *Madhura* | *Guru Snigdha* | *Seeta* | *Madhura* | *Vatajit,Pittasrajit kaphakrit* | *Balya,rasayana, Swaryam ,jivaniyam ,Brimhaneeyam,veerya vridhikrit* |
| *Madhuka* | *Madhura tikta* | *Guru Snigdha* | *Seeta* | *Madhura* | *Vatapitta kaphapaham* | *balaswaravarnakrit* |
| *Chandana* | *Tikta Madhura Katu kashayam* | *Laghu Ruksha* | *Seeta* | *Katu* | *Pittahara, Kaphahara,* | *Dahaprasamana, Varnya,Hridya, Trishnahara,,Krimighna, Vishaghna* |
| *Sariba* | *Madhura tikta* | *Guru Snigdha* | *Seeta* | *Madhura* | *Kaphavataharam Rakthapitha prasamani* | *Rakthasodhaka Dipanam,Amanasanaam, Jwaraharam.* |
| *Vacha* | *Katu Tikta* | *Laghu,ushna ,tikshna,ruksha tikshna* | *Ushna* | *Katu* | *Vatahara, Kaphahara* | *Dipana,Pachana Medhya,Ayushyam,Smritivardhini,vakswaraprada, Budhi smritiprada* |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Haritaki* | *Kashaya, Katu, Tikta, Amla, Madhura* | *Laghu ruksha* | *Ushna* | *Madhura* | *Tridoshaghnam* | *Rasayana,dipana,papakha,Medhya, ayushyam,budhindriya balapradam,smritikarakam* |
| *Vibhitaki* | *Kashaya Katu tikta* | *Ruksha Laghu* | *Ushna* | *Madhura* | *Kaphapittajith,* | *Bhedaka,vaiswaryanalksanamll* |
| *Amalaki* | *Pancharasa lavana varjita* | *Ruksha Laghu sara* | *Seeta* | *Madhura* | *Tridoshajit,* | *Rasayana,dhatuvridhikrit* |
| *Sunthi* | *Katu* | *Laghu Snigdha* | *Ushna* | *Madhura* | *kaphavataghnam* | *Anulomana,DeepanaPachanam,swaryam* |
| *Maricham* | *Katu, Tikta* | *Laghu, ruksha, Tikshna* | *Ushna* | *Katu* | *Kaphavataharam pithavardhakam* | *Dipana,pachana Ruchya,chedana,* |
| *Pippali* | *Madhura Katu Tikta* | *Laghu Snigdham* | *anushna* | *Madhura* | *vatakaphaharam* | *Dipaneeyam rasayanam* |
| *Haridra* | *Katu Tikta* | *Ruksha ushna* | *Ushna* | *Katu* | *Kaphapithgni Vatasranut.* | *Krimighna,kushtaghna, Varnya,Vishaghna, Pramehaghna* |
| *Daruharidra* | *Tiktam katu* | *Ruksha ushna* | *Ushna* | *katu* | *Kaphapithajit* | *Doshapacana Netramayaharam* |
| *Patola* | *Tikta, Katu* | *Laghu, ruksha* | *ushna* | *katu* | *tridoshashamanam* | *Vrishyam, varnyam, Dipana,pachani* |
| *Saindava* | *Saswadu* | *laghu* | *Anushnam* | | *tridoshaghnam* | *Vrishyam,hridyam* |
| *Sankhapushpi* | *Katu Tikta Kashaya* | *Sara* | *Seeta* | *katu* | *kaphapithaghni* | *balya,ayushyam, medhya,rasayanam,mohanasakam,manasarogahrit,smritikantibalagnida,swarakarini* |