



Role of *Samvardhana Ghrit* in the Management of Childhood Disability Disorders: A Review

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ABSTRACT:

Today development disabilities are emerging as a new problem of society. While disability is discussed particularly in children, about a quarter of chronic childhood problems are neurological in origin. Disability treatment and management in the world is a big challenge. The *Ayurveda* medicine (like *Vatashamaka* drug and *Medhya* drug) and along with *Panchkarma* procedures will help at possible level for the rehabilitation towards lives with potential of independence. *Samvardhana Ghrit* is mentioned in the *Lehadhyaya* chapter of the *Kashyapa Samhita*. It is used to promote healthy growth of child without interference from disease, as well as to improve or treat impaired conditions in children who are *Pangu* (lame), *Muka* (dumb), *Ashruti* (deaf), and *Jada* (idiot).

Aim: To evaluate the efficacy of *Samvardhana ghrit* in the management of childhood disability disorders.

Materials and Methods: A literature review was conducted with the help of many important Ayurvedic and Modern textbooks, and article published in various journals.

Result and discussion: Present review reveals that the ingredients of *Samvardhana Ghrit* have action on the brain and nervous system. Further, as the formulation is in *ghrit* form, it can easily cross the blood brain barrier and show its effect. **Conclusion:** *Samvardhana Ghrit* can be used for the management of childhood disability disorder. However, additional panchakarma and physiotherapy may provide additional benefit to the patients.

Key words: *samvardhana ghrit*, *ayurveda*, *disability disorder*, *childhood*

INTRODUCTION

In any culture where children are the most precious possession, their physical and mental well-being is the uttermost expectation. Therefore, the whole development

of children is the responsibility of today. The continuous growth of the knowledge system will prove the protection of the future, and research can contribute a lot to it.



Ayurveda is not only a medical system but also a body of practicable knowledge that enhances the quality of life of living beings. Constant research studies in Ayurveda are important and validated, so it has enough strength in its fundamentals.

Currently, development disabilities are an emerging health issue, and disease in childhood with a neurological origin is proportionally high among them.

In Ayurveda, the childhood disability condition is vividly described in several chapters in the text. *Phakka*¹ (developmental delay due to nutritional causes or secondary to disease) *Pangulya* (lame) *Mukatva*² (dumb) *Jadatva* (Stiff body parts) *Ekanga Roga*³ (disease affecting single part of the body) *Sarvanga roga*⁴ (disease affecting a single part of the body) *Pakshaghata*⁵ (paralysis) are similar conditions that come under the related ailments.

Disability is a neurological condition which is directly involved in the function of the Nerve system of the body and the mechanism of controlling, regulating and coordinating is get affected. *Samvardhana ghrit*⁶ is highly recommended for the smooth and rapid growth of a healthy child, as well as for improving or treating impaired conditions in those who are *pangu* (lame), *muka* (dumb), *Ashruti* (deaf), and *Jada* (blind) (idiot) which is frequently seen in childhood disability disorders.

MATERIAL AND METHODS

This review is conducted using a complete and organized search of the available literatures in Ayurveda texts and published articles. The searches were performed using various databases, including PubMed, Scopus, MedLine, Google Scholar and others. The keywords used for the search included, *medhya*, *samvardhana ghrit*, *disability*, *balya* and *brimhana*.

RESULT- Table No 01: Ayurvedic Pharmacology of Ingredients of *Samvardhana ghrit*

Effect of *Samvardhana ghrit* on Cerebral Palsy

A significant number of studies on Cerebral Palsy in children which is a major cause of childhood disability document the significant effect of *Samvardhana ghrit*.^{17,18,19,20}

Pharmacological action:

***Khadira*:** The methanol extract of *A. catechu* showed potential in the management of neurodegenerative diseases (Alzheimer's disease) via the anticholinesterase effect and

significant antioxidant effect.²¹

***Arjuna*: DNA damage protection and free radical scavenging action**

Ethanollic extracts and its fractions used to DNA strand breakage assay and comet assay analysis by using of PBR 322 plasmid and rat adrenal PC-12 cells was examined. Maximum inhibition of DPPH, hydroxyl, ABTS nitric oxide radicals and metal chelation was observed in ethyl acetate fraction. *T.arjuna* extract ameliorate various impairments associated with DNA damage free radical formation.²²

***Sida cordifolia*:**

In Neurodegenerative Disease

The plants in rasayana is *S.cordifolia* which is used clinically in the treatment of neurodegenerative diseases. These plants are generally characterized by processing strong antioxidant activity. Free radicals have been extensively reported to be implicated in neurodegenerative diseases²³.

Alleviation of Neurodegenerative Disease Symptoms

In an investigation, the aqueous fractions well as its sub-fraction, including the hexaneschloro form and the aqueous ones were assessed for their effects on the rotenone induced biochemical, neurochemical, histopathological, and behavioural changes in rat model. These signs of the disease were substantially diminished. The reduction in the level of dopaminin in the midbrain region was reversed on co-treatment with aqueous extract. This effect is possibly mediated by the antioxidant properties of the aqueous extracts²⁴.

Kebuk (Costus speciosus): Adaptogenic activity

The effect of alcoholic extract of *Costus speciosus* rhizomes and leaves on stress induced change in brain neurotransmitters and enzyme monoamine oxidase levels in albino rats. The extracts were found to possess normalizing activity against cold immobilization stress induced change in norepinephrine (NE), dopamine (DA), 5-hydroxy tryptamine(5-HT), 5-hydroxy indole acid(5-HIAA). The results obtained provide biochemical evidence for antioxidant activity of the tested extract.²⁵

DISCUSSION

According to Charaka, every drug either acts via *rasa*, *guna*, *vipaka*, *virya*, or *prabhava*. Hence, in this formulation, a powerful factor²⁶ among the above should be investigated to find its probable mode of action.

All most all the ingredients of *Samvardhana ghrita* possess *Madhura rasa* as the main *rasa* while as *anurasa Tikta*, *Katu*, and *Kashaya* *rasa* are present. Prominent *Guna* of the ingredients can be distinguished as *Snigdha*, and *Guru guna*, *Sheeta* as *Virya*, *Madhura* as predominant *Vipaka* can be identified. *Kapha-Pitta*, *Vata-Pitta dosha karma* are prominent with *Medhya* and *Balya* actions. Further, *Ghrita* and *Kshira* are equally effective for higher functions of brain such as *Medhya*²⁷, *Medhavaradhaka*²⁸, *Rasayana*^{29,30}etc.

According to the analysis of *rasa* present in individual drugs, the majority of drugs (46%) have *Madhura rasa*. The combination of *Prithvi* and *Jala mahabhuta* creates *Madhura rasa*. *Mamsa dhatu's panchabhautika* composition is similar to *Madhura rasa*. As a result of the *Samanya Vridhikarna* law, *Madhura rasa* is able to aid in the growth and proper nourishment of muscular tissue. *Madhura rasa* shows *Balya*, *Jeevaniya*, *Sarvathatu Vardhaka*, *Brimhana*, *Preenana* and *Sthairiyakarana* actions. As a result, *Madhura rasa* appears to be capable of providing proper nourishment to neurons in order to take up a load of already damaged neurons. *Madhura rasa* with combination of *Tikta* and *Katu* *rasa* may help in the proper development of neuron synapses, results a regeneration process in neuronal precursor cells due to its penetrating strength. Due to the *agneya* nature of *katu rasa* it involved in *Indriyautojetaka* (receiving information from the senses) action, *Margana vivraunati* (proper channelization and replacement of damaged neurons), and *Agnidipana* (secretion of hormones in synaptic vesicles). Hence, it is conceivable that it could provide stimulation in the areas of brain where cells can regenerate, particularly the hippocampal region. **Graph No. 1**

Guna

When the *guna* of all the ingredients of the study drug is considered, 42.8 percent of the drugs have *Snigdha guna* and 30 percent have *Laghu guna*, bringing the total to 28.8 percent. *Snigdha guna* improves the qualities of *Tarpaka kapha* (helps to restore and strengthen the functional brain). *Laghu guna's* effect improves an individual's *utsaha* (enthusiasm) and *sphurti* (energy). **Graph No. 2**

Virya

Sheeta virya shows *stambhana* (holding) and *sthairikarana kriya* (stability) may restrict the excessive neuronal discharge that is seen in case of convulsions. **Graph No. 3**

Vipaka

When considering the *Vipaka* of all of the ingredients, 60% of the drugs have *Madhura vipaka* and 40% have *Katu vipaka*. *Madhura vipaka* increases all *sharira dhatus*, including brain and muscular tissues, nourishes *manas* and *indriya*, relieves vitiated *Pitta* and *Vata doshas*, improve vital strength, and gives firmness to the body. On the other hand, *Katu vipaka* stimulates all sense organs to perceive their respective objects by increasing overall metabolism in the body, proper enzymatic secretions, and thus minimizing nutrient deficiencies. The *Medhya* drugs (acting on CNS) are *Katu* and *Madhura vipaka* predominantly. **Graph No. 4**

Prabhava

Medhya, *Balya*, and *Rasayana* are *prabhava* of drug *Samvardhana ghrita*. *Medhya* drugs work primarily through their '*Achintya virya*,' or *prabhava*. This suggests that these drugs have a direct effect on *medha* (intellect). The precise mode of action of these *medhya* drugs is unknown, but these drugs finally increase the overall functional capacity of the brain through any of these mechanisms: increased perfusion, metabolism, and improved chemical imbalance in the brain. *Rasayana* drugs are said to increase all *sharira dhatus* (tissues) quantitatively and qualitatively. *Balya* drugs offer strength to the body that is ailing as a result of chronic disease. The *Brimhana* drug enhances the production of healthy *dhatus* in the body.

Dosha shaman

Samvardhana ghrita possesses *vata-pitta shamaka*, *kapha pitta shamaka*, and *tridosha shamaka* have been balanced by this drug. As a result, the drug possesses excellent *Vatahara* properties that are supposed to vitiated in neurological disorders.

Pharmacodynamic properties related to the application of Samvardhana ghrita

Lipid Solubility

Drugs that dissolve easily in fats and can be absorbed quickly from the gut can easily move into the CSF and the brain. *Ghrita*, which is a fat, is quickly absorbed and distributed in the target areas of the body³¹ The Blood-Brain Barrier (BBB) selectively allows lipids and lipid-soluble drugs to pass through it.

Ketogenic effect

This method is commonly used in seizure disorders. *Ghrita* has phospholipids, fatty acids, and other nutrients that support to fix neurotransmitters that are in imbalance state. This diet causes a ketogenic effect in the body, which prevents seizures and indirectly causes brain damage.

***Saindhava Lavana* (Rock salt)**

The following are some of *Saindhava Lavana's* evidence-based research studies:

1. Sodium is required for action potential generation and transmission in neurons and muscle fibers. "
 2. BBB (Blood Brain Barrier) crossing is possible at the ionic stage. It makes it easier for *Ghrita*, a substance that dissolves in fat, to move from the bloodstream to the brain tissue.
 3. Sodium (Na) is the most common ion in the extracellular fluid (ECF). It makes up almost half of the osmolarity of ECF.
 4. High osmotic pressure can cause the endothelial cells in capillaries to shrink, which opens up the spaces between the tight junctions of endothelial cells and makes the BBB more porous. As a result, drugs can enter the tissues of the brain. The effect of *Samvardhana Ghrita* can be further classified on principle of modern perspective as follows.
- Drugs capable of regenerating neurons -A. catechu has shown promise in the treatment of neurodegenerative diseases due to its anticholinesterase activity and significant antioxidant effect.³²; *S.cordifolia* is a plant that is used in the treatment of neurodegenerative diseases. These plants are distinguished by their high antioxidant activity. Free radicals have been extensively linked to neurodegenerative diseases.³³ The hydroalcoholic extract of the leaves induced CNS depression in mice, this effect was also evidenced from reduction of the motor activity of the animals, nevertheless, without interfering with motor coordination³⁴.
 - Drugs showing the effect on Anti-inflammatory activity are Khadira :- According to the findings, 57 extract containing both baicallin and (-) catechin directly inhibits the production of inflammatory fatty acids by acting on the COX and LOX enzymes³⁵. Prishniparni:- It has anti-inflammatory properties due to the stabilisation of COX-2 lysosomal membrane³⁶. Arjuna:- Immunomodulatory

activity and Anti-inflammatory³⁷ Kebuka :- It has a significant anti-inflammatory effect.³⁸

- Drugs showing effect on Anti-Oxidant Activity are Khadira:- Catechin, rutin, and isorhamnetin are free radical scavengers that contribute significantly to *Acacia catechu's* bio potency.³⁹ Prishniparni:- Significant antioxidant activity has been linked to the presence of phenol derivatives, flavonoids, sterols, and terpenes.⁴⁰ Arjunagenin has been the most active compound compared to the others and has a moderate inhibitory effect on the process of respiratory oxyburst, with an IC50 value of 60 g/mg⁴¹ Kubuka:- N.C. Vijayalakshmi investigated the polyphenol content and antioxidant activity of various parts of *Costus speciosus*⁴².

CONCLUSION

Present review reveals that *Samvardhana ghrita* can be used as oral medicine for the management of disability disorders of children as indicated by Kashyapa. However, panchakarma and physiotherapy may provide additional benefit to the patients.

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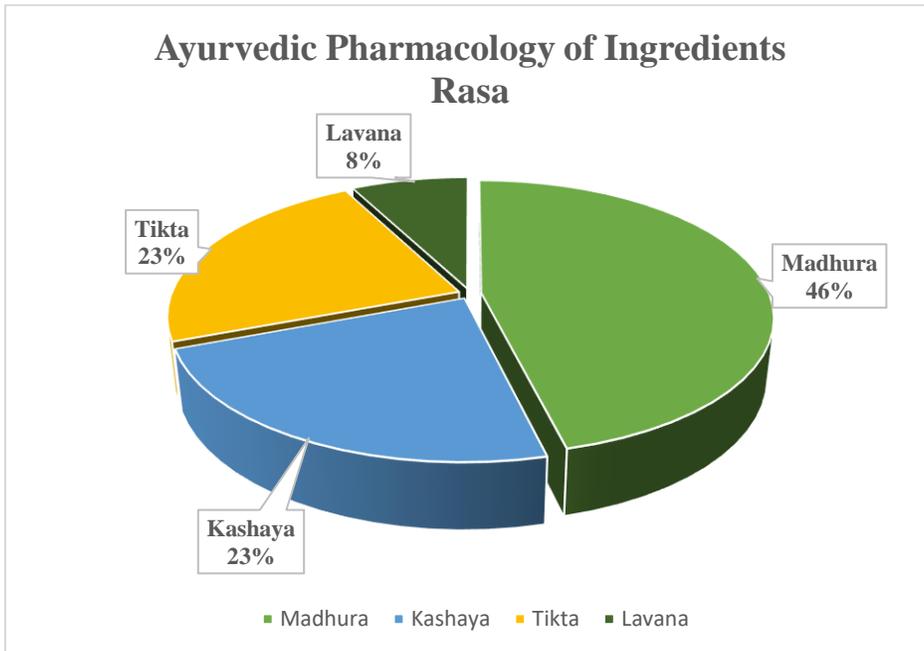
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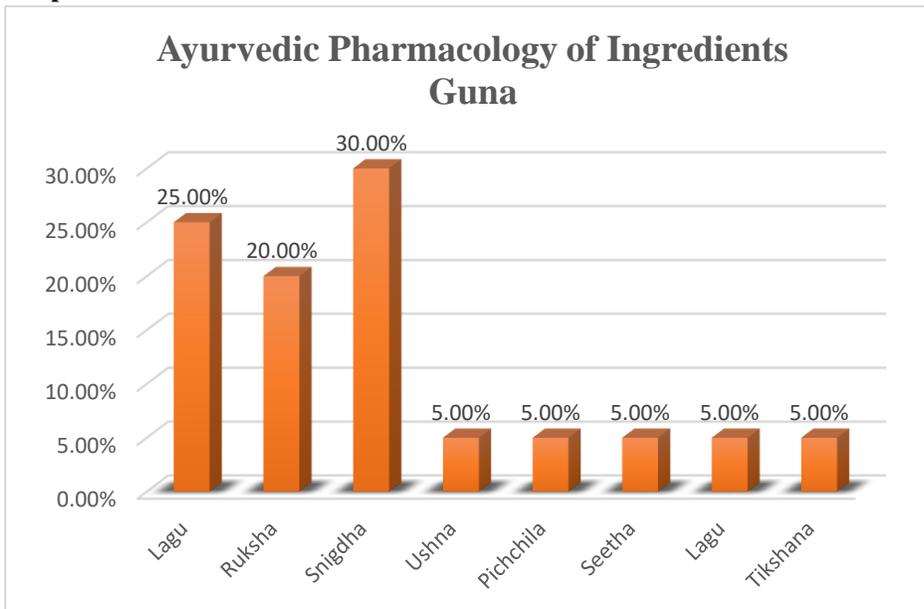
Table No 01: Ayurvedic Pharmacology of Ingredients of *Samvardhana ghrit*

| Name | Rasa | Guna | Virya | Vipaka | Doshagnata | Karma (Pharmacological actions) |
|---------------------|-------------------|---|--------------------|---------|------------------------|---|
| Kadira | Tikta, Kashaya | Lagu Ruksha | Sheeta | Katu | Kaphapittahara | Grahi, Pachana, Kushtagna, Raktapitta Prashamana, Kasahara, Dantya, Krimigna, Jvarahara, Vranaropana ⁷ |
| Prishniparni | Madura Tikta | Lagu Snigdha | Ushna | Madhura | Tridoshahara | Vatahara, Nadibalya, Balya, Vrishya, Vathasulahara. Deepana, Anulomana, Grahi, Trishnashamaka, Angamarda prashaman, Sonithasthapana, Sothahara, Muthra Jawaragna, Haridya, Sandhaniya ⁸ |
| Bala | Madura | Snigdha, Guru | Sheeta | Madhura | Vata Pitta Shamaka | Balya, Rasayana, Ojaskara, Vedanasthpan, Vrsya, Pramehagna, Vidhagna, Sothahara, Vathashulahara, Hardaya, Muthrala, Snehana, Raktapittahara, Sangrahana, Grahi, Vrsya ⁹ |
| Arjuna | Kasaya | Sheeta, Lagu Ruksha | Sheeta | Katu | Kapha pitta nashaka | Balya, Visagna, Medohara, Raktha sthambana, Muthra sangrahaniya, Jaragna, Balya, Visagna, Ksataksaya hara, Bhagnasabdhanakara and raktadosahara ¹⁰ . |
| Athibala | Madura | Snigdha | Sheeta | Madura | Vata Pitta Shamaka | Balya, Rasayana, Vrsya, Raktapittahara, Sangrahana, Grahi ¹¹ . |
| Kebuka | Tiktha | Laghu Ruksha | Sheeta | Katu | Kapa pitta shamaka | Pittahara, Kaphahara, Garbsya Sankochaka, Grahi, Deepana, Pachana, Hridya, Raktashodhaka, Krimighna ¹² |
| Kshira | Madura | Snigdha, Guru Pichchils | Sheeta | Madura | Vata pitta shamaka | Balya, Medhya, Jeevaniya, Stanyakara, Prinana, Manaskara, Raktapittanasana ¹³ , angapushtiprada (gives nourishment to the body) ¹⁴ |
| Sahindava | Lavana | Snigdha, Ushna, Tikshna Snighdh, Laghu, Hima, Sukshma | Anushn a Sheeta | Madura | Tridoshahara | Deepaniyatama, Deepana, Pachana, Ruchya, Vrishya, Netryam ¹⁵ |
| Ghrita | Madura | Snigdha, Guru | Sheeta | Madura | Vata pitta shamaka | Swarya, Dipana, Oja-Teja-Bala- Ayushya vriddhikar, Vrishya, Medhya, Vayasthapan, Chakshushaya, Rakshoghna ¹⁶ |

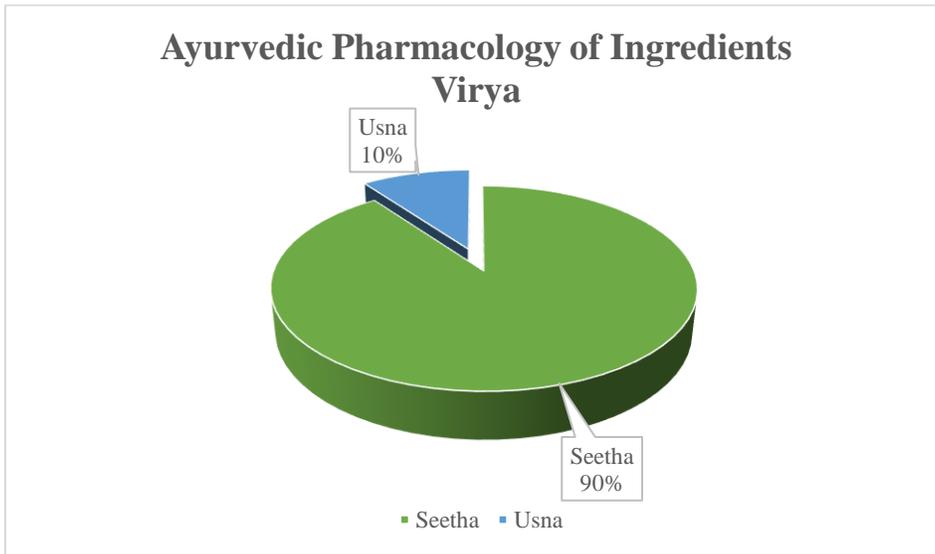
Graph No. 1



Graph No. 2



Graph No. 3



Graph No. 4

