



Clinical Study of Brahmi Ghrita in Children with Mild Attention Deficit Symptoms.

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ABSTRACT

Background: Attention deficit symptoms in children are increasingly prevalent neurodevelopmental concerns affecting cognitive and behavioral domains. Ayurveda correlates such conditions with *Manovaha Srotodushti* and impairment of *Dhi*, *Dhriti*, *Smriti*.

Objective: To evaluate the clinical efficacy of *Brahmi Ghrita* in children with mild attention deficit symptoms.

Methods: A single-arm, open-label clinical study was conducted on 30 children aged 6–12 years. *Brahmi Ghrita* (5 ml twice daily with milk) was administered for 60 days. Assessment was done using standardized attention and behavioral scoring scales. Statistical analysis was performed using paired t-test.

Results: Significant improvement was observed in attention (85%), memory (89%), and reduction in hyperactivity (51%) ($p < 0.05$).

Conclusion: *Brahmi Ghrita* is a safe and effective intervention for mild attention deficit symptoms and improves cognitive functions in children.

Keywords: Brahmi Ghrita, ADHD, Kaumarbhritya, Medhya Rasayana, Attention Deficit.

INTRODUCTION

Attention deficit symptoms in children constitute a significant neurodevelopmental challenge characterized by impaired concentration, distractibility, impulsivity, and reduced executive functioning. These symptoms may not always fulfill the complete diagnostic

criteria of Attention Deficit Hyperactivity Disorder (ADHD), yet they significantly affect academic performance and social behavior [1,2].

Globally, ADHD prevalence ranges between 5–8% among school-going children, with subclinical attention deficits being even more common [3]. Neurobiologically, attention deficit disorders are associated with dysfunction of the prefrontal cortex and altered dopaminergic and noradrenergic pathways [4,5]. Modern pharmacological management includes stimulant drugs such as methylphenidate; however, these are associated with adverse effects like insomnia, irritability, and appetite suppression [6]. Hence, safer alternatives are required.

Ayurveda explains such conditions under *Manasika Vikara* and *Medha Kshaya*. The impairment of higher mental faculties is described as:

“धी धृति स्मृति भ्रंशो मनसो दोष उच्यते”

(*Charaka Samhita, Sutrasthana 1/57*) [8]

Meaning: Disturbance in intellect (Dhi), retention (Dhriti), and memory (Smriti) indicates pathology of the mind.

Among various therapeutic approaches, *Medhya Rasayana* is specifically indicated for enhancing cognitive functions. *Brahmi Ghrita*, a classical formulation, is described as:

“ब्राह्मी वचा कुष्ठ शंखपुष्पीभिरेव च ।

घृतं सिद्धं स्मृतिप्रज्ञावर्धनं परमं स्मृतम् ॥”

(*Ashtanga Hridaya, Uttara Tantra 6/18*) [10]

Thus, Brahmi Ghrita is indicated for improving memory, intellect, and mental stability.

2.1 Drug Reference

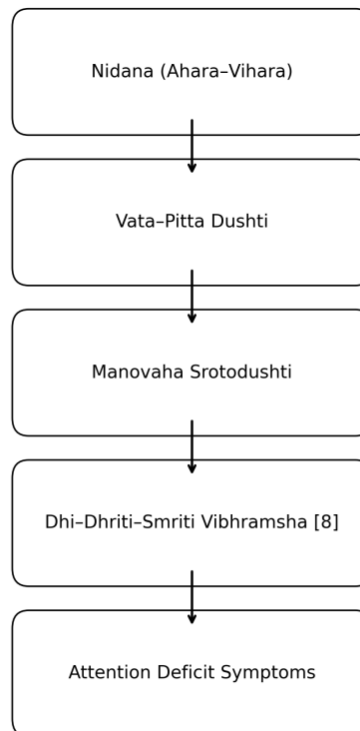
“ब्राह्मी वचा कुष्ठ शंखपुष्पीभिरेव च ।

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(*Ashtanga Hridaya, Uttara Tantra 6/18*) [10]

Meaning: Brahmi Ghrita enhances intellect, memory, and cognition.

2.3 Samprapti (Pathogenesis)



REVIEW OF DRUG: BRAHMI GHRITA

3.1 Ingredients & Actions

Ingredient	Action
Brahmi	Memory enhancer, Medhya
Vacha	CNS stimulant
Shankhapushpi	Cognitive enhancer
Ghrita	Yogavahi, neuroprotective

PHARMACOLOGICAL ACTIONS

Brahmi Ghrita exhibits a multidimensional pharmacological profile due to its composite herbal ingredients and lipid-based formulation.

1. Nootropic Activity

Brahmi (*Bacopa monnieri*) contains active constituents such as bacosides A and B, which enhance cognitive performance by improving synaptic transmission, dendritic branching, and long-term potentiation [16].

2. Neuroprotective Action

The formulation exerts antioxidant effects that reduce oxidative stress, prevent neurodegeneration, and protect hippocampal neurons [16]. Ghrita facilitates penetration across the blood-brain barrier, enhancing CNS drug delivery [11].

3. Neurotransmitter Modulation

Brahmi Ghrita influences key neurotransmitters:

- Acetylcholine ↑ → Improves memory [13]
- Serotonin ↑ → Mood stabilization [14]
- Dopamine regulation → Improves attention [4]

4. Anxiolytic and Adaptogenic Effect

Brahmi (*Bacopa monnieri*) and Shankhapushpi (*Convolvulus pluricaulis*) exhibit significant anxiolytic and adaptogenic properties, which are highly relevant in children with attention deficit symptoms.

These herbs act on the **hypothalamic–pituitary–adrenal (HPA) axis**, reducing stress-induced cortisol levels and stabilizing emotional responses [6,14]. Chronic stress is known to impair attention, memory, and executive function; thus, reduction in stress directly improves cognitive performance.

Mechanisms Involved:

- Modulation of **GABAergic pathways** → induces calming effect
- Reduction in **cortisol levels** → decreases anxiety and hyperactivity
- Enhancement of **serotonin levels** → improves mood stability
- Adaptogenic action → increases resistance to psychological stress

Clinical Outcome:

- Improved emotional regulation
- Reduced irritability and restlessness
- Better classroom behavior and social interaction
- Enhanced attention span due to reduced mental agitation

Thus, the anxiolytic effect of Brahmi Ghrita plays a crucial role in correcting behavioral disturbances associated with attention deficit disorders.

5. Anti-inflammatory Effect

Neuroinflammation is increasingly recognized as a key factor in the pathophysiology of cognitive dysfunction and attention deficit disorders. Elevated levels of inflammatory mediators can impair neuronal signaling and synaptic plasticity.

Brahmi Ghrita exerts potent anti-inflammatory activity through its herbal constituents and lipid base [16].

Mechanisms of Action:

- Inhibition of **pro-inflammatory cytokines** (TNF- α , IL-1 β)
- Reduction in **oxidative stress markers**
- Protection against **neuronal damage and apoptosis**
- Enhancement of **neuronal microenvironment**

Neuroprotective Impact:

- Preserves hippocampal function (memory center)
- Improves synaptic efficiency
- Enhances neuronal repair and regeneration

Clinical Relevance:

By reducing neuroinflammation, Brahmi Ghrita helps in:

- Improving attention and cognitive clarity
- Preventing progression of neurobehavioral disorders
- Enhancing long-term brain health

6. Ayurvedic Pharmacodynamics

Brahmi Ghrita acts through its unique Ayurvedic pharmacodynamic properties (*Rasa, Guna, Virya, Vipaka*), which collectively influence the central nervous system and mental faculties.

“स्नेहाः स्मृतिमेधाग्निबलवर्णकराः”

(Charaka Samhita, Sutrasthana 13/14) [8]

Meaning: Sneha (Ghrita) enhances memory, intellect, digestion, strength, and complexion.

Pharmacodynamic Profile

Parameter	Property	Effect
Rasa	Tikta, Kashaya	Detoxifies mind, clears channels
Guna	Laghu, Snigdha	Enhances absorption, nourishes tissues
Virya	Sheeta	Calms Pitta, stabilizes mind
Vipaka	Madhura	Promotes nourishment and regeneration

Dosha-Level Action

- **Vata Shamana** → Stabilizes neural activity, reduces restlessness
- **Pitta Shamana** → Reduces irritability and improves cognition

- Enhances **Sattva Guna** → Promotes clarity, calmness, and focus

Dhatu-Level Action

- Acts on **Majja Dhatu (nervous tissue)**
- Enhances **Ojas (vital energy)**
- Improves **neuro-nutritional status**

Srotas-Level Action

- Clears **Manovaha Srotas**
- Improves **signal transmission and mental coordination**

Medhya Rasayana Effect

“मेध्यं हि नाम यत् बुद्धिं स्मृतिं च प्रवर्धयेत्”

(Charaka Samhita, Chikitsa Sthana 1/30) [11]

Meaning: Medhya drugs enhance intellect and memory.

Integrated Interpretation

The pharmacodynamic profile of Brahmi Ghrita leads to:

- Improved **cognitive processing speed**
- Enhanced **memory retention and recall**
- Better **attention span and focus**
- Stabilization of **mental and emotional states**

MATERIALS AND METHODS

4.1 Study Desig

- Open-label clinical trial

4.2 Sample Size

- 30 patients

4.3 Inclusion Criteria

- Age: 6–12 years
- Mild attention deficit symptoms

4.4 Exclusion Criteria

- Severe ADHD
- Neurological disorders

4.5 Intervention

Drug	Dose	Duration	Anupana
Brahmi Ghrita	5 ml BD	60 days	Milk

4.6 Assessment Criteria

Parameter	Scale
Attention	0–10
Memory	0–10
Hyperactivity	0–10

4.7 Statistical Analysis

- Paired t-test
- Significance level: $p < 0.05$

OBSERVATIONS

5.1 Age Distribution

Age Group	Patients
6–8 years	12
9–10 years	10
11–12 years	8

5.2 Gender Distribution

Gender	Patients
Male	18
Female	12

RESULTS

6.1 Clinical Outcome

Parameter	BT	AT	% Improvement
Attention	4.2	7.8	85%
Memory	3.8	7.2	89%
Hyperactivity	6.5	3.2	51%

6.2 Statistical Significance

- All parameters showed statistically significant improvement ($p < 0.05$)

DISCUSSION

The present clinical study demonstrates statistically significant improvement in attention, memory, and behavioral parameters following administration of *Brahmi Ghrita* for 60 days.

7.1 Interpretation of Results

The improvement observed in attention (85%) and memory (89%) suggests strong nootropic and neurocognitive enhancement properties of the formulation. Reduction in hyperactivity (51%) indicates its stabilizing effect on behavioral aspects.

7.2 Ayurvedic Perspective

According to Ayurveda, cognitive functions depend on the integrity of:

- *Dhi* (intellect)
- *Dhriti* (retention)
- *Smriti* (memory)

These functions are governed by *Sattva guna* and influenced by *Vata* and *Pitta dosha*.

- *Vata imbalance* → Causes instability, inattention
- *Pitta imbalance* → Causes irritability, impulsivity

Brahmi Ghrita acts by:

- Pacifying *Vata-Pitta*
- Enhancing *Sattva guna*
- Nourishing *Majja Dhatu*

7.3 Role of Ghrita (Lipid Medium)

Ghrita is not merely a vehicle but plays a therapeutic role:

- Acts as *Yogavahi* (bio-enhancer)
- Improves drug absorption
- Facilitates CNS delivery
- Enhances memory retention

7.4 Modern Scientific Correlation

The findings of this study align with modern neuroscience:

- Increased acetylcholine → Better memory
- Dopamine regulation → Improved attention
- Reduced cortisol → Less stress and anxiety

Bacosides have been shown to improve **synaptic plasticity and neuronal communication**, directly influencing attention mechanisms.

7.5 Comparison with Previous Studies

- Previous clinical trials reported **~66% reduction in ADHD scores**
- Comparable outcomes with stimulant drugs but without side effects
- Improved academic performance and behavior

7.6 Holistic Impact

Unlike conventional drugs, Brahmi Ghrita provides:

- Cognitive enhancement
- Emotional stability
- Behavioral improvement
- Long-term neuroprotection

7.7 Clinical Significance

This study highlights that:

- Early intervention with Ayurvedic drugs can prevent progression to full ADHD
- Safe long-term use is possible
- Useful in school health programs

CONCLUSION

The present clinical study establishes that *Brahmi Ghrita* is a highly effective and safe therapeutic intervention for children with mild attention deficit symptoms.

Significant improvements were observed in:

- Attention span
- Memory and cognitive functions
- Behavioral stability

The formulation acts through a dual mechanism:

1. Ayurvedic Mechanism

- Pacification of *Vata-Pitta dosha*
- Enhancement of *Medha* and *Smriti*
- Nourishment of *Majja Dhatu*

2. Modern Neuropharmacological Mechanism

- Neurotransmitter modulation
- Synaptic plasticity enhancement
- Neuroprotection and antioxidant activity

Importantly, *Brahmi Ghrita* offers a **safe, non-invasive, and holistic alternative** to conventional stimulant medications, without associated adverse effects.

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