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EFFECTIVENESS OF *Medhya Aushadhi* AND *Sirodhara* OR *Takradhara* IN ADHD PATIENTS – A REVIEW

Dr. Sonam Angial[1], Dr. Mahesh Narayan Gupta[2], Dr. Ashish Thakur[3]
[1]P.G. scholar, P.G. Department of Kaumarbhritya State Ayurvedic College Lucknow.
[2]Professor and H.O.D, P.G. Department of Kaumarbhritya State Ayurvedic College Lucknow.
[3]P.G. Scholar R.G.G.P.G. Ayurvedic College and Hospital Paprola ,Kangra H.P.

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ABSTRACT
Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder marked by inattention, hyperactivity, and impulsivity that impairs educational, occupational, and social functioning. Conventional pharmacotherapies such as stimulants and non-stimulants can cause side effects, poor adherence, and incomplete symptom control. Ayurveda offers holistic alternatives through Medhya Aushadhi (cognitive-enhancing herbs) and Sirodhara or Ṭakradhara (Panchkarma procedures indicated for disorders of the mind and nervous system). Classical texts describe Medhya Rasayana agents—Brahmi (Bacopa monnieri), Sankhapuṣpi (Convolvulus pluricaulis), Yaṣṭimadhu (Glycyrrhiza glabra), Maṇḍukaparṇi (Centella asiatica) and Guḍuchi (Tinospora cordifolia)—as enhancers of Dhi, Dhṛti, and Smṛti (intellect, retention, and memory). Modern research corroborates their antioxidant, adaptogenic, and neuroprotective effects. Clinical studies and case reports suggest improvements in attention span, reaction time, hyperactivity, and sleep when Medhya Rasayana are used alone or alongside Sirodhara/Ṭakradhara. The procedures may promote autonomic balance, parasympathetic activation, and stress reduction—beneficial mechanisms for ADHD symptom modulation. Although preliminary findings are promising, evidence remains limited by small sample sizes, heterogeneous protocols, and lack of standardized outcome measures. Future randomized controlled trials integrating validated ADHD scales, neurocognitive assessments, and safety monitoring are warranted. Overall, Medhya Aushadhi and Sirodhara/Ṭakradhara appear to be safe, effective, and holistic adjuncts in ADHD management, aligning Ayurvedic wisdom with modern neurophysiology.

KEYWORDS: *ADHD ; Attention Deficit Hyperactivity Disorder, Medhya Rasayana, Medhya Aushadhi, Sirodhara, Ṭakradhara ,Cognitive Enhancement, Panchakarma, Integrative Therapy*

INTRODUCTION
Attention-Deficit/Hyperactivity Disorder (ADHD) is a chronic neurodevelopmental disorder characterized by persistent patterns of inattention, hyperactivity, and impulsivity that interfere with daily functioning and development. The condition often manifests in childhood and may persist into adolescence and adulthood. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR), ADHD is classified into three subtypes: predominantly inattentive, predominantly hyperactive-impulsive, and combined presentation. The global prevalence of ADHD in children is approximately 5–8%, and around 60% of these individuals continue to experience symptoms into adulthood. Neuroimaging and neurochemical studies indicate dysfunctions in dopaminergic and noradrenergic circuits, especially within the prefrontal cortex, striatum, and cerebellum—regions associated with executive function, attention, and behavioral inhibition.

Modern Perspective
From a modern biomedical standpoint, ADHD arises from a complex interplay of genetic, neurochemical, and environmental factors. Dysregulation of catecholamine neurotransmitters (dopamine and norepinephrine) leads to impaired cortical arousal, resulting in decreased attention, poor impulse control, and hyperactivity. Structural and functional imaging studies show reduced gray matter volume and altered connectivity in fronto-striatal networks.

Conventional treatment approaches include pharmacotherapy (such as methylphenidate, amphetamine salts, or atomoxetine) and behavioral therapy. While these can significantly reduce symptoms, they are often associated with side effects like appetite loss, insomnia, increased heart rate, and dependency potential. Furthermore, some patients exhibit partial or transient improvement, indicating the need for holistic, sustainable, and safer therapeutic alternatives. Hence, integrative medicine—especially Ayurveda—has drawn growing attention for its multidimensional approach to mental health.

Ayurvedic Perspective
In Ayurveda, disorders involving restlessness, poor concentration, and emotional instability are described under the broader category of *Manovikara* (mental disorders) and *Vataja Unmada* (*Vata*-dominant mental disturbance). The mind (Manas) and its faculties—

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Dhi (intellect or grasping power), *Dhṛti* (retention and restraint), and *Smṛti* (memory)—are the core determinants of mental balance and cognitive performance. ADHD-like symptoms can be correlated with impairment of these three faculties due to vitiation of Vata dosha (particularly *Praṇa Vata* and *Vyana Vata*) and depletion of *Ojas* (the essence of vitality).

According to *Charka Samhita*, an unbalanced *Vata* leads to instability of mental processes and disturbed flow of neural impulses, producing hyperactivity and inattention. Additionally, the *Majja Dhatu* (nervous tissue) and *Manovaha Srotas* (mental channels) are considered the anatomical and functional substrates responsible for higher mental activity. When these are weakened or obstructed by *Vata*, mental functions like focus, learning, and reasoning decline.

The Ayurvedic management strategy for such conditions emphasizes:

1. *Vata–Samana Chikitsa* – pacification of *Vata* through oleation (Snehana), nourishment, and soothing therapies.
2. *Medhya Rasayana Prayoga* – use of intellect-promoting rejuvenative herbs (e.g., *Brahmi*, *Maṇḍukaparṇi*, *Sankhapuṣpi*, *Yaṣṭimadhu*, *Guḍuchi*) to strengthen *Dhi*, *Dhṛti*, and *Smṛti*.
3. *Sirodhara* / *Ṭakradhara* – as *Panchkarma* procedures to calm the nervous system, regulate sleep, and enhance autonomic balance.

Integration of Ayurveda and Modern Neuroscience
Modern research validates many of the traditional Ayurvedic claims.

- *Bacopa monnieri* (*Brahmi*) and *Centella asiatica* (*Maṇḍukaparṇi*) have shown nootropic and adaptogenic effects, improving attention and working memory via antioxidant and neuroprotective mechanisms.
- *Sirodhara* has been demonstrated to lower cortisol levels, reduce sympathetic overactivity, and induce relaxation akin to deep meditation—effects highly relevant to hyperarousal seen in ADHD.
- Ayurvedic pharmacodynamics explain these benefits through dosha balancing and *Manas prasadana* (mind pacification), while neurophysiology interprets them as serotonin and GABA modulation and autonomic rebalancing.

Thus, both paradigms converge on a shared understanding: ADHD involves a state of mental hyperactivity and imbalance, whether described as *Vata prakopa* or cortical dysregulation. Ayurveda's *Medhya* and *Panchakarma* approaches aim to restore internal harmony, thereby improving focus, cognition, and behavioral control.

Conceptual Correlation of ADHD with Ayurveda

- **Ayurvedic Diagnosis:** ADHD corresponds closely to *Vataja Unmada*, *Bhrama*, or *Manovikara* with features of restlessness, inattentiveness, impulsivity, and emotional lability.
- **Pathogenesis (Samprapti):** Imbalance of Vāta in Sira and Majjā Dhātu leads to dysfunction of Manovaha Srotas (neural channels).
- **Treatment Principle:** Pacification of Vāta through *Snehana*, *Śirodhāra/Ṭakradhāra*, and administration of *Medhya Rasāyana* that enhance cognitive function and stabilize mind.

***Medhya Aushadhi* and Their Pharmacological Basis**

Herb	Classical Reference	Major Constituents	Modern Actions Relevant to ADHD
Brahmi (Bacopa monnieri)	*Caraka Samhitā*, *Bhāvaprakāśa*	Bacosides ßA & B	Improves learning, reduces oxidative stress, modulates serotonin & dopamine
Maṇḍukaparṇi (Centella asiatica)	*Suśruta Samhitā*	Asiaticoside, Madecassoside	Enhances memory, neurogenesis, and cerebral circulation
Saṅkhapuṣpi (Convolvulus pluricaulis)	*Caraka Samhitā – Medhya Rasāyana*	Glycosides & Flavonoids	Nootropic, anxiolytic, antioxidant
Yaṣṭimadhu (Glycyrrhiza glabra)	*Caraka Samhitā – Medhya Varga*	Glycyrrhizin	Improves retention, anti-stress, neuroprotective
Guḍuci (Tinospora cordifolia)	*Bhāvaprakāśa*	Tinosporin, Berberine	Adaptogenic, immunomodulatory, neuroprotective

Experimental data demonstrate that these herbs modulate neurotransmitters (acetylcholine, serotonin, dopamine), up-regulate antioxidant enzymes, and enhance synaptic plasticity — all key pathways implicated in ADHD.

***Sirodhara* and *Ṭakradhara* in Neuropsychological Health**

- ***Sirodhara*** involves a continuous stream of medicated oil on the forehead, producing a tranquilizing effect through hypothalamic modulation and parasympathetic activation.
- ***Ṭakradhara*** uses medicated buttermilk, especially effective in *Pitta-Vata* dominant conditions, reducing irritability and improving sleep.

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- Modern physiological studies show reduction in blood pressure, heart rate, and cortisol levels post-*Sirodhara*, supporting stress-modulating properties beneficial in hyperactive ADHD.

Integrative Mechanistic Model

Ayurvedic Concept	Modern Neurophysiological Equivalent	Therapeutic Outcome
Vata-Pitta imbalance	Dysregulation Of dopamine/noradrenaline pathways	Hyperactivity & inattention
Manovaha Srotas Dushti	Altered neuronal connectivity and oxidative stress	Poor concentration & emotional lability
Medhya Rasayana	Neuroprotective, antioxidant, and nootropic agents	Enhanced cognition & impulse control
Sirodhara/ Ṭakradhara	HPA axis modulation and parasympathetic activation	Calmness, improved focus, better sleep
Manas Prasadana	Emotional regulation and neurochemical harmony	Balanced behavior and attention stability

DISCUSSION

The present review highlights the holistic approach of Ayurveda in managing behavioral and neurocognitive disorders like Attention-Deficit/Hyperactivity Disorder (ADHD) through *Medhya Aushadhi* and *Sirodhara/Ṭakradhara* therapies. ADHD, as per modern understanding, is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity, arising from altered dopaminergic and noradrenergic neurotransmission in the prefrontal cortex and basal ganglia. Functional imaging studies reveal decreased activity in the prefrontal cortex, striatum, and cerebellum, leading to deficits in executive function, attention regulation, and emotional control.

In contrast, Ayurveda conceptualizes such disorders under the broad category of *Manovikara* or *Vataja Unmada*, wherein derangement of *Vata doṣa*—particularly *Praṇa Vayu*, *Sadhaka Pitta*, and *Tarpaka Kapha*—leads to instability of mind, disturbed memory, and erratic behavior. The imbalance of *Rajas* and *Tamas guṇa* over *Sattva guṇa* results in mental restlessness, inattentiveness, and impulsivity. This *tri-dosha* and *triguṇa* imbalance correlates closely with the neurochemical dysregulations proposed in ADHD.

Role of *Medhya Aushadhi*

The *Medhya Rasayana dravyas*—notably *Brahmi (Bacopa monnieri)*, *Maṇḍukaparṇi (Centella asiatica)*, *Saṅkhapuṣpi (Convolvulus pluricaulis)*, *Yaṣṭimadhu (Glycyrrhiza glabra)*, and *Guḍuci (Tinospora cordifolia)*—act on higher mental faculties (*Dhi*, *Dhṛti*, *Smṛti*). Classical texts such as *Charka Saṃhita (Cikitsa Sthana 1/30)* describe them as "*Medhya*, *Balya*, and *Prajnavṛddhikara*", meaning they enhance intellect, mental strength, and comprehension.

Modern pharmacological studies substantiate these effects:

- *Bacopa monnieri* enhances synaptic plasticity and increases serotonin and dopamine levels.
- *Centella asiatica* improves neuronal dendritic arborization and GABAergic transmission, promoting calmness and cognitive stability.
- *Convolvulus pluricaulis* shows antioxidant and anxiolytic properties, modulating stress-related neurotransmitters.
- *Tinospora cordifolia* acts as an immunomodulator and adaptogen, improving neuronal resilience.

Collectively, these herbs restore neurochemical balance, reduce oxidative stress, and improve attention span, memory retention, and behavioral control—closely addressing the core deficits seen in ADHD.

Role of *Sirodhara* and *Ṭakradhara*

Sirodhara and *Ṭakradhara* are traditional *Panchakarma*-based *Murdhni Taila* procedures known for calming the central nervous system and restoring *Vata-Pitta* balance. Continuous pouring of medicated liquids (oil, milk, or buttermilk) on the forehead acts through both neurophysiological and psycho neuro endocrine mechanisms.

Recent studies demonstrate that *Sirodhara* induces a parasympathetic dominance, decreases serum cortisol, and synchronizes alpha brain wave activity, producing relaxation, improved concentration, and emotional stability. *Ṭakradhara*, specifically, cools the head, reduces *Pitta* aggravation, and is beneficial in hyperactivity and sleep disturbances—common features in ADHD.

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Thus, these therapies complement *Medhya Aushadhi* by soothing the mind, improving sleep and focus, and reducing impulsive behavior, creating a synergistic effect for better clinical outcomes.

Integrative Viewpoint

From an integrative medicine perspective, combining Ayurvedic *Medhya Rasayana* and *Panchkarma* therapies with modern behavioral and pharmacological interventions offers a more sustainable, side-effect-free management approach for ADHD. While conventional psychostimulant drugs (like methylphenidate and amphetamines) provide symptomatic relief, they often cause insomnia, appetite loss, and dependence. In contrast, *Medhya* herbs enhance neuroplasticity naturally, while *Sirodhara* modulates autonomic tone and neurohormonal regulation, aligning with modern neurotherapy principles.

However, current evidence is largely based on small-scale or pilot studies. Therefore, multicentric randomized controlled trials (RCTs) with standardized preparations and outcome measures (e.g., Conners' ADHD Scale, EEG markers) are essential to scientifically validate these traditional therapies.

CONCLUSION

The integrative evaluation of *Medhya Aushadhi* and *Sirodhara/Ṭakradhara* demonstrates significant potential in the management of ADHD. Ayurvedic herbs like *Brahmi*, *Maṇḍukaparṇi*, and *Saṅkhapuṣpi* act as neuroprotective and cognition-enhancing agents, while *Sirodhara* and *Ṭakradhara* help in reducing hyperactivity, anxiety, and sleep disturbances through neuroendocrine modulation. Both ancient and modern perspectives converge on a common ground—neurochemical balance, stress reduction, and cognitive restoration. The Ayurvedic approach not only targets symptoms but also promotes mental harmony (*Sattvavajaya Chikitsa*) and long-term neurobehavioral stability.

Future research integrating clinical neuroimaging, biochemical assays, and traditional Ayurvedic assessment parameters can further substantiate the efficacy and mechanism of these therapies. Hence, *Medhya Aushadhi* with *Sirodhara/Ṭakradhara* may serve as an effective, safe, and holistic complementary therapy for ADHD patients, bridging the gap between traditional wisdom and modern neuroscience.

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