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ROLE OF BRAHMI IN ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): AN ANALYTICAL REVIEW

[1]Diksha Upreti, [2]Alok Kumar Srivastava, [3]Reena Pandey, [4]Lalita Sharma, [5]Poonam

[1]MD Scholar, [3]Professor, Department of Kaumarbhritya.
[2]Professor,[4,5] MD Scholars, Department of Panchkarma.
Rishikul Campus, Uttarakhand Ayurved University, Haridwar (Uttarakhand).

***Corresponding Author: Dr. Diksha Upreti**

MD Scholar, Dept. of Kaumarbhritya, Rishikul Campus, Uttarakhand Ayurved University, Haridwar.

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ABSTRACT

Attention deficit Hyperactivity disorder is aneuro developmental type of brain disorder, specially involving dopamine and nor epinephrine neurotransmitter which govern a variety of cognitive process, directly responsible for the control of behavior, motivation and motor function. It is characterized by hyperactivity, impulsiveness and inattention. ADHD is more commen in boys than girls (male to female ratio 4:1 for hyperactivity type and 2:1 for inattentive type). ADHD affects children and teens and can continue into adulthood. Children with ADHD have been found to have cognitive deficits, lower IQ, impaired social relationships with in the family and with peers as well as poor study skills and lower academic achievement. In Ayurveda it occurs due to vitiation of dhee (rational thinking), dhriti (intellect / retaining power of the mind), smriti (memory) which results into improper contact of the senses with their objectives and give rise to inattention, hyperactivity and impulsivity. In Ayurvedic texts Medhya Rasayanare described which are used as Shaman chikitsa for these types of disorders because Medhya drugs improve coordination, cognition and concentration capacity of the brain. Chark described 4 drugs in medhya Rasayan. BRAHMI chemical constituents show good effects on ADHD. ADHD is on the rise globally so the brahmi (Bacopa) is a natural substance that has the ability to significantly help ADHD without all the scary side effects of psycho-stimulants.

KEYWORDS: ADHD, medhya rasayan BRAHMI.

INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a neuro-developmental type of brain disorder, specially involving dopamine and nor epinephrine neurotransmitter which govern a variety of cognitive process, directly responsible for the control of behavior, motivation and motor function. It is characterized by hyperactivity, impulsiveness and inattention. These symptoms include early distraction by extraneous stimuli, does not seems to listen to what is being said, often forgetful in daily activities, daydreams, easy confusion, slow movement, nonstop talking, difficulty awaiting turn in games or group situations and fidgets with limbs. Symptoms begin usually with6 years of age, present for at least 6 months with impairment of child development.[1] These behaviors interfere with school and home life.

ADHD affects children and teens and can continue into adulthood. Several studies estimated a prevalence of ADHD 10-20% in India. The prevalence of ADHD among primary school children was found to be 11.32%. It is higher among the boys (66.7%) as compared to the girls (33.3%). The prevalence among lower socioeconomic group was found to be 16.33% and that among middle socioeconomic group was 6.84%.[2] These children just need extra care & attention and a scientific approach to get out of this disorder. 2 ADHD affected children possess poor learning, peer relationship, below average cognitive functioning, increase rate of school dropouts and learning disabilities. It often continues into adolescence and adulthood and can cause a lifetime frustration and emotional pain.

ADHD is classified into three subtypes,

- Predominantly Hyperactive-Impulsive Type. Behavior marked by hyperactivity and impulsivity, but not inattentiveness.

- Predominantly Inattentive Type. Behavior marked by inattentiveness, but not hyperactivity and impulsivity
- Combination Type. A combination of hyperactivity/impulsivity and inattentive symptoms. This is the most common type of ADHD

ADHD as an entity is not described. However, there are some references to abnormalities in behavior that can be correlated with ADHD. The Chraka Samhita refers to the following: vitiation of Dhee (rational thinking), Dhriti (intellect/ retaining power of the mind), Smriti (memory). This causes "Asatmyindriyarthsanyoga" abnormal conduct leading to "improper contact of the senses with their objectives." This results in inattention, over activity, and impulsivity, characteristic of ADHD.[3]

The modern medicine has no satisfactory solution for the behavioral or psychiatric disorders of childhood and there is no treatment of long term effect. The current treatment may involve the administration of amphetamine type substances, there are many side effects of this drug like numbness, confusion, hallucination, unexplained muscle pain, loss of coordination (DRUGS.COM) 2 many more which make more worst condition of the patient. Therefore alternative Ayurvedic pharmacological treatments are required.

In Ayurvedic texts Medhya Rasayanare described which are used as Shaman chikitsa for these types of disorders because Medhya drugs improve coordination, cognition and concentration capacity of the brain. Chark described 4 drugs in medhya Rasayan, BRAHMI, GUDUCHI, SANKHPUSHPA, MADHUYASHTI.[4] BRAHMI chemical constituents show good effects on ADHD.[4]

Brahmi -The name, Brahmi, is thought to be derived from "Brahma," the hindu creator of the world and originator of Ayurveda is recognized as a powerful brain enhancer. Since the brain is considered to be the centre of creative activity, the herb which best improves the brain's functioning was called Brahmi. It also called Saraswati – named after Goddess

Saraswati – Deity for learning. This is because the herb is useful in improving learning skills and intelligence. Traditionally it was used to anoint newborns, in order to improve their intelligence and "'open the gate of Brahma.'

Latin name- Bacopa monnieri
Family- scorphulariaceae

Rasa- Madhur&Tikat
Virya- sheeta
Vipak- Madhura[5]

It has a neutralizing effect on vata, pitta and kapha, it has an affinity for all tissues, especially plasma, blood and nerve, and for the circulatory, digestive, nervous and excretory srotas. In Ayurveda, pitta energy is considered the regulator of heat, energy, excitement and passion. A pitta imbalance is believed to be reflected in an inflamed, overheated, over- agitated, condition of mind and or body. Brahmi is known as a soother of pitta imbalances.

The chemical Analysis of Brahmi

Bacopa has far minimal side effects than the dangerous psychotropic drugs often prescribed today. Bacopa has even shows to help regulate dopamine production up and down as needed. The active constituents of Brahmi are derived from the leaves are called steroidal saponine, which include the bacosides, the primary active principles. There are evidence that bacosides have cognitive and nootropic effect via multiple mechanisms. This includes activation of the serotonergic and cholinergic systems and enhancement of synaptic plasticity. Bacoside have been found to enhance the metabolism of the neurotransmitters, thus increasing the function of the brain. They have been found to have antioxidant and mitochondrial stabilization activities. They have been attributed with enhancing nerve impulse transmission, thereby strengthening memory and general cognition.[6]

The chemical constituents responsible for facilitating effects of bacopa on learning schedule were identified as a mixture of bacoside A & B. The bacoside also enhanced vital protein active & produced an increase in protein

Synthesis in the Hippocampus.

BACOPA as a Reducer of Stress Anxiety Depression

An animal study conduct at the CDRI in India showed that a standardized extract of bacopa successfully guarded against acute and chronic stress. more specifically guarded against acute and chronic stress. It reduced damaging stomach ulcer and adrenal activity. The study concluded that bacopa possess a potent adaptogenic activity. It works as a natural stress reliever by helping our bodies better handle or adapt our daily stressors. University of Michigan health system shows that positive effect of bacopa on enhancement of the neurotransmitters acetylcholine and possibly, serotonin or GABA.[7]

So due to effect as a reducer of a stress, anxiety or depression it is helpful for ADHD patient.

Brahmi ghrit study on ADHD was conducted on children of either 6 b/t the age group of 6& 12 yr diagnosed with mixed variety of ADHD as per DSM-IV criteria. Initially pilot study (n=10) was conducted and further after fixation of potent dose study (n=27) was carried out, where in Brahmi ghrit was compared with methylphenidate. ADHD symptoms were assessed by using Dupaul ADHD rating scale. In pilot exploratory study, Brahmi ghrit has shown 66% decrease in ADHD score. In therapeutic confirmative study only 16% improvement was seen with Brahmi ghrita, which was similar to methylphenidate.[8]

Studies conducted by the Central Drug Research Institute (CDRI) in India using CDRI 08 have found reductions in hyperactivity and inattention against baseline readings in ADHD diagnosed children. 12 In one double blind, placebo controlled clinical trial at CDRI, only those children diagnosed as having ADHD were included. The treatment group received CDRI for 12 weeks daily; from the 13th to the 16th week all the children were given placebo only. They were evaluated initially on day 0, and then at 4, 8, 12 weeks of drug administration. The last evaluation was done 4 weeks after stopping the medication, when all children were given placebo only. The tests administered were personal information, mental control, sentence repetition, logical memory, word recall (both meaningful and non-meaningful words), digit span, picture recall, delayed response, and paired associate learning. Significant to highly significant results were obtained on all the parameters after 4–8 weeks.[9]

A double-blind, randomized, placebo controlled trial of 36 children with diagnosed ADHD was conducted over a 16-week period. Nineteen children received an extract of bacopa (Memory Plus), standardized to contain 20% bacosides at a dosage of 50 mg twice daily for 12 weeks, and 17 subjects were given a placebo. Active drug treatment was followed by 4 weeks of placebo and the children were evaluated on numerous cognitive function tests at baseline, 4, 8, 12 and 16 weeks. A significant benefit was observed in the treatment group at 12 weeks, evidenced by improvement in sentence repetition, logical memory and paired associated learning tasks. Evaluation showed that these improvements were maintained at 16 weeks after 4 weeks of placebo administration.[10]

A randomized, double blind placebo-controlled trial was conducted in India using Mentat, an herbal formulation containing Bacopa, in 60 school-aged children with ADHD. Mentat contains Bacopa monnieri, Withania somnifera, Centella asiatica and Nardostachys jatamanasi in their optimum concentrations. Children were treated for 6 months with either Mentat or placebo. There were statistically significant improvements in the Conner's ADHD rating scale and on a subtest Of psychological test (Gestalt closure subtest on the Kaufman Assessment Battery for Children).[11]

A small, double blind,12 week study was conducted at the neuropsycology laboratory at the school of biophysical science and electrical engineering in Australia had volunteers take 300miligrams of bacopa daily while others volunteers received a placebo. Prior to the study commencing, researchers tested all volunteers on visual information processing, memory and speed of information processing. The test were repeated 5 and 12 weeks after the study began. A significant improvement among the volunteers in the bacopa group was found compared to those in the placebo group, leading researchers to conclude that it may improve higher order cognitive processes that are critically dependent on the input of information from our environment such as learning and memory.[12]

In a double-blind, randomized trial conducted at the department of BRD Medical college, Gorakhpur, India, 19 ADHD children, aged 8-10 years old, were given 50 mg. of bacopa twice daily. 17 DHD children received a placebo. After 12 weeks of treatment, the children took a battery of specialized tests. The data revealed a significant improvement in the areas of sentence repetition, logical memory and pair associative learning in all 19 children who took bacopa. Evaluation did not occur until four weeks after stopping bacopa usage, indicating that it had a lasting effects.[13]

Precautions- Bacopa has been shown
*significantly elevate thyroxine levels, thus caution is advised in hyperthyroidism.

*Brahmi may cause gastrointestinal symptoms in people with: coeliac disease, fat malabsorption syndrome, vitamins A/D/E/K deficiency, dyspepsia, or pre-existing cholestasias due to its high saponin content.
Adhd patient, Brahmi can be given in the form of Brahmi syrup (most palatable for children), Brahmi panak, Brahmi ghirit (orally, nasya), Brahmitail (shiropichu, shirodhara, basti,).

CONCLUSION

There is highly significant evidence regarding the use of brahmi for its cognitive and nootropic effects. Many study have shown that chronic administration of bacopa improves inattention and hyperactivity, and the data of the study revealed a significant improvement in learning capacity of child, logical memory, and areas of sentence repetition. Some study also concluded that bacopa possess a potent adaptogenic activity and it works as a natural stress and anxiety reliever. The chemical constituents of brahmi bacoside enhanced vital protein active & produced an increase in protein synthesis in the hippocampus. brahmi in the form of ghrita is more effective coz it effect on BBB due to its lipophilic nature. So the brahmi can be considered in treating ADHD, especially given its safety profile and long lasting effects.

REFERENCES

1. Ghai essential pediatrics 6th edition, edited by o. p ghai, piyush gupta, v. k paul, revised reprint with corrections, 2005; 2: 64.
2. http://www.indianjpsychiatry.org/article.asp?issn=0019-5545;year=2013;volume=55;issue=4;spage=338;epage=342;aulast=Venkata.
3. https://www.ayurvedacollege.com/articles/students/Brahmi-Review By Deborah Berger data.
4. Charak samhita of agnivesa revised by charak and dradhabala, vidyotini hinditcommentary edited by py.kashinath sastri and dr. gorakhnath Chaturvedi, publish by chaukhambha bharti academy, Varanasi reprint, 2009.
5. https://www.banyanbotanicals.com/info/ayurvedic-living/living-ayurveda/herbs/brahmi/.
6. https://draxe.com/bacopa/.
7. www.ijam.co.in/index.php/ijam/article/viewFile/238/176.
8. Prabhakar manu etal/int.j.res.ayurveda pharm. 8(supp/1) -critical review on effect on brahmi grith in psychiatric disorder, 2017.
9. Stough, c and scholey, A., advances in natural medicines, nutraceutricals and neurocognition, (boca raton, florida: CRC presss, Taylor and francis Group, 2013; 279.
10. Negi K S, Singh Y D, Kushwaha K P, Rastogi C K, Rathi A K, Srivastava J S, et al. "Clinical evaluation of memory enhancing properties of Memory Plus in children with attention deficit hyperactivity disorder." Ind J Psychiatry, 2000; 42.
11. Kalra V, Hina Z, Pandey RM, Kulkarni KS. "A randomized double blind placebo-controlled drug trial with Mentat in children with attention deficit hyperactivity disorder."Neurosciences Today, 2002; 6(4): 223-227.
12. https://draxe.com>bacopa.
13. Use of capsule Brahmos in ADHD by jeevanrekha Ayurved chikitsalay.