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Review Article

ROLE OF AYURVEDA IN ADHD: A CRITICAL REVIEW

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ABSTRACT

Mental health of children is becoming prime concern, as mental disorders are increasing very haste. Attention-Deficit/Hyperactivity Disorder (ADHD) is one such complex neuro-behavioural disorder that affect not only the life of child, it potentially affects the harmony, social setup and even economical responsibilities of the family. ADHD is estimated to affect 2-17%ⁱ in India and in Jaipur 9.7%ⁱⁱ aged 12 and under when diagnosed with DSM-5 criteria. According to DSM-5, Attention-Deficit /Hyperactivity Disorder is characterized by

persistent pattern of inattention or hyperactivity/impulsivity. Academic, cognitive, behavioural, emotional, and social functioning of the child are also affected. In contemporary science some FDA approved drugs used to minimise the symptoms of ADHD but its long-term use has side effects to deal with. In Ayurveda it can be correlated with *Unmada vyadhi*. For mental disorders ayurveda has multidimensional approach so in this scientific paper authors have critically analysed and compiled various research papers available on Google scholar, Pubmed and other web of science databases. So, this paper would be helpful in understanding pathophysiology and the management of ADHD in Ayurveda way.

Keywords- Ayurveda, Inattention, Hyperactivity, *Manas prakriti*, ADHD

Introduction

One of the medical conditions that has been the subject of the most research is Attention-Deficit/Hyperactivity Disorder (ADHD). ADHD is defined by a persistent pattern of inattention or hyperactivity/impulsivity, according to the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) of the American Psychiatric Association (APA). Motor overactivity and restlessness are present, as well as a diminished ability to self-inhibit. It affects social, cognitive, and behavioural skills in children and adolescents and is one of the most prevalent neurodevelopmental disorders, with an increasing incidence rate.

The global estimated prevalence of this disorder is 5.29%, in India it ranges from 2-17%ⁱⁱⁱ, in Jaipur 9.7%,^{iv} 5-10% in children and 4-6% in adults^v. Boys are 2-4 times more likely to be affected than girls^{vi}. Strong genetic component, poor synchronisation of functioning neurons, and antenatal history of the mother may all contribute to birth complications such prolonged labour, toxemia, and difficult delivery. Drug abuse and addiction of mother are also being recognized as risk factors^{vii}. However, the precise etiological reason for ADHD is uncertain. Brain traumas, low birth weight, birth asphyxia, trauma, brain abnormalities, lack of family discipline, food additives, toxic substances, etc. are known to have some part in its development. Up to 12 years old at the time of onset, the child should have more than six symptoms of a certain type. The DSM-5 divides symptoms into two subtypes: inattentiveness and hyperactivity/impulsivity. While hyperactivity includes always being on the go and being fidgety, inattention includes careless blunders, not listening to instructions, easily being side-tracked, etc., while impulsivity comprises intrusive, interruptive conduct, cannot wait for turn.

There are several strategies to control ADHD, but pharmacotherapy, which includes psychostimulant medications like amphetamine/methylphenidate and tricyclic antidepressants (TCAs) like imipramine and nortriptyline, is the usual method. These medications have several serious adverse effects, such as loose stools, anorexia, sleeplessness, and others with methylphenidate, while convulsions, weight gain, and other anticholinergic symptoms can occur with TCAs. These authorised ADHD drugs frequently have disappointing outcomes.

Ayurveda and ADHD

In recent years various publications in Ayurveda have investigated this subject and found significant results in term of effectiveness. In Ayurveda there are no direct references of ADHD but some references about abnormal behaviour are discussed under features of *UNMADA- Mano Vibhrama, Buddhi Vibhrama, Smriti Vibhrama, Sheela Vibhrama, Cheshta Vibhrama* and *Achara Vibhrama*, and considering nature of symptomatological manifestation, it can be correlated with *Unmada*. It is a *Vata-Pitta Pradhan Sarva-Dosha (Sharirik+Mansik) Prakopak Vyadhi*. This is a *Manovaha Sroto Vikara* with predominance of *Raja* and *Tama guna*^{viii}. *Acharya Kashyap* in *Vedna-Adhyay* has also mentioned *Pralap, Vaichitya, Arti* in *Unmada Vyadhi*^{ix}. Further, the features of *Rakshas Rajasik Manas Prakriti* and *Matsya Tamsik Manas Prakriti* are almost on the same wavelength of ADHD. The causes may be the vitiation of *Dhee* (rational thinking), *Dhriti* (intellect/retaining power of mind), *Smriti* (memory) which leads to abnormal behavior such as inattention, hyperactivity, and impulsivity etc due to improper contact of senses with their objectives^x. As *Tridosha, Triguna*, and *Mana* are inter-related with each other and *Vata* is responsible for vitiation of *Sharirika* as well as *Mansika Dosha*, thus produce disease.

Probable Correlation of ADHD Symptoms in Ayurveda: -

Table No.1. INATTENTIVE TYPE

ADHD SYMPTOMS	UNMADA PRATYATM LAKSHAN ^{xi}	DOSHAJ UNMADA ^{xii}	MANSIK PRAKRUTI ^{xiii}
Display poor listening skills.	<i>Mana-vibhrama</i>	-	-
Loses or misplaces items.	<i>Smriti-vibhrama</i>	-	-
Side tracked by external or unimportant stimuli.	<i>Dhyan-Asthane (Purvarupa) Buddhi-Vibhrama</i>	-	-
Forgets daily activities.	<i>Smriti Vibhrama</i>	-	<i>Amedhas (Pashava Tamasic Kaya)</i>
Diminished attention span.	<i>Mana-Vibhrama</i>	-	-
Lack's ability to complete schoolwork or other assignments.	<i>Sheela-Vibhrama</i>	<i>Chestitam Mandam(Kaphaj Unmada)</i>	<i>Santrasta (Saarpa Rajasika Kaya)</i>
Avoid or is disinclined to begin homework or activities.	<i>Cheshta-Vibhrama</i>	<i>Chestitam Mandam(Kaphaj Unmada)</i>	-
Fails to focus	<i>Mana-Vibhrama</i>		-

Table No.2. HYPERACTIVE / IMPULSIVITY TYPE

ADHD SYMPTOMS	UNMADA PRATYATM LAKSHAN ^{xi}	DOSHAJ UNMADA ^{xii}	MANSIK PRAKRUTI ^{xiii}
Squirms when seated or fidgets with hands or feet.	<i>Cheshta-Vibhrama</i>	<i>Akshi-Bhru-Oshtha-Ansa-Hanu Graha, Akasmat Hasta-Padanga Vikshepana(Vataja Unmada)</i>	-

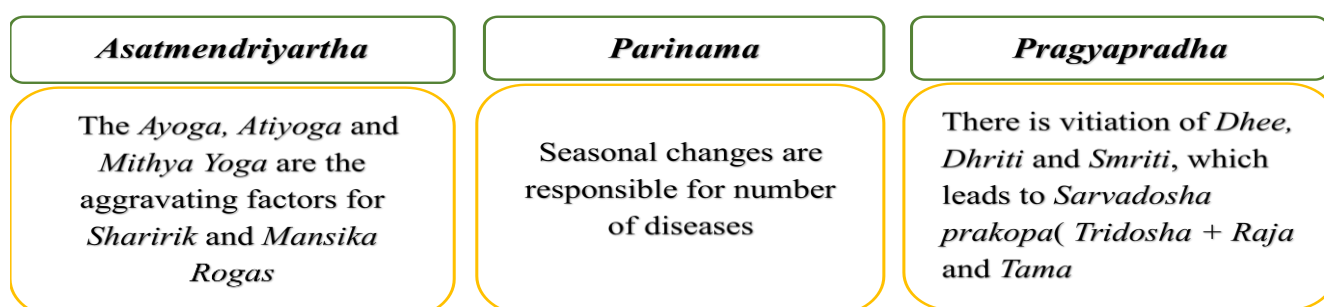
Marked restlessness that is difficult to control.	<i>Cheshta-Vibhrama</i>	<i>Abhidraavan (Pittaja Unmada) Abhikshana Smita-Hasitanritya-Geet-Vaditra Samprayoga Asthane (Vataja Unmada)</i>	-
Appears to be driven by a motor or is often on the go.	<i>Cheshta-Vibhrama</i>	-	<i>Anavasthita (Matsya Tamsika Kaya) Tikshna Swabhav (Saarpa Kaya)</i>
Lacks ability to play and engage leisure activities in quite manner.	<i>Sheela-Vibhrama</i>	<i>Abhikshana Smita-Hasitanritya-Geet-Vaditra Samprayoga Asthane (Vataja Unmada)</i>	-
Incapable of staying seated in class.	<i>Cheshta-Vibhrama</i>	-	-
Overly talkative.	<i>Achara-Vibhrama</i>	<i>Satatam Aniytanam Cha Giramutsarga (Vataja Unmada)</i>	-
Difficulty waiting turn.	<i>Cheshta-Vibhrama</i>	<i>Amarsha (Pittaja Unmada)</i>	<i>Amarshina (Rakshas Rajasika Kaya)</i>
Interrupts or intrudes into conversations and activities of others.	<i>Mana-Vibhrama</i>	<i>Amarsha (Pittaja Unmada)</i>	-
Impulsively bursts out answers before questions completed.	<i>Buddhi-Vibhrama</i>	<i>Amarsha (Pittaja Unmada)</i>	-

NIDANA-

There are no specific *nidana* (etiological factors which are responsible for occurring the disease) for ADHD because they are not explicitly listed in Classical Ayurvedic texts. *Nidanas* for ADHD could therefore be those that vitiate the *Tridosha* and *Raja-Tama*.

Hence, grossly three factors are responsible for all *Manovaha srotas vyadhi*.^{xiv}

Fig. 1 Nidana



Asatmendriyartha – It means improper functioning of *Gyanendriya* (sense organs). The *Ayoga* (insufficient), *Atiyoga* (excess) and *Mithya yoga* (unsatisfactory) result of any sense organ may lead to disease. *Ayoga* can be explained as a person is not able to hear question clearly what another one is telling him; this will result into improper sensory impulse conducted to higher center and will be failed to answer properly to the question. Same as when a person can listen very low frequency sound then sound of normal frequency for others, can cause hearing impairment to the former one. If there is problem in understanding or wrong perception of the words spoken by others, then there will be wrong interpretation of the words, it is *Mithya yoga*. All these activities are controlled by sense organs which is under control of *Mana*^{xv}.

Parinama- It is the time factor which cannot be avoided by anyone. There are many diseases which are much more specific to a particular age group. *Mana* is the link between sensory stimuli and motor response as because to perceive knowledge, *sannikarsha* of *Indriya*, *Indriya-artha*, *Atma* with *Mana* is must^{xv}.

Pragyapradha- It includes *Dhee*, *Dhriti* and *Smriti vibhransh*. *Dhee vibhransh* indicates the derangement of wisdom, means the person misinterprets things to do and not to do. *Dhriti vibhransh* is loss of patience. The person is not able to stop himself indulging into unwanted things/matters. *Smriti vibhransh* means vitiation of memory power. These all occurs when activities which are contraindicated to do, is done by the people. This leads to vitiation of *Sarvadosha prakopa* (*Tridosha+ Raja and Tama*) and thus leads to *Manovaha-srotodushti*^{xvi}.

Probable Main Factors: -

1) **Garbhaja hetu(maternal factors)**- The physical-psychological growth and development of the child depends upon mother, what mother listens, eats, does all affect the child^{xvii,xviii}. For e.g., according to *Acharya Charaka* if a pregnant woman consumes more sweet food, may lead to diabetes in child. If mother is not sleeping properly at night and roams here and there at night, then the child will have *Unmada vyadhi* in future^{xix}.

There are many studies in contemporary science related to it that show how maternal deeds done during pregnancy can affect a child after birth. For example, a study on the impact of maternal depression in pregnancy on early child development related to it showed the following results: Applying the standard 12/13 cutoff, 1565 (14%) women were depressed antenatally but not at either time point postnatally. Employing the modified DDST, 893 (9%) children were developmentally delayed at 18 months of age. Persistent depression (EPDS ≥ 10 at both time points) is associated with developmental delay (adjusted OR 1.34, 95% CI 1.11–1.62). Applying the 12/13 and 14/15 cut-offs gave similar results. After further adjustment for postnatal depression, the effect sizes were slightly attenuated^{xx}.

2) **Jataja hetu(acquired/environmental factors)**- The physical-psychological growth and development of the child depends upon *Ahara-Vihara* taken by him after birth^{xv,xvi}.

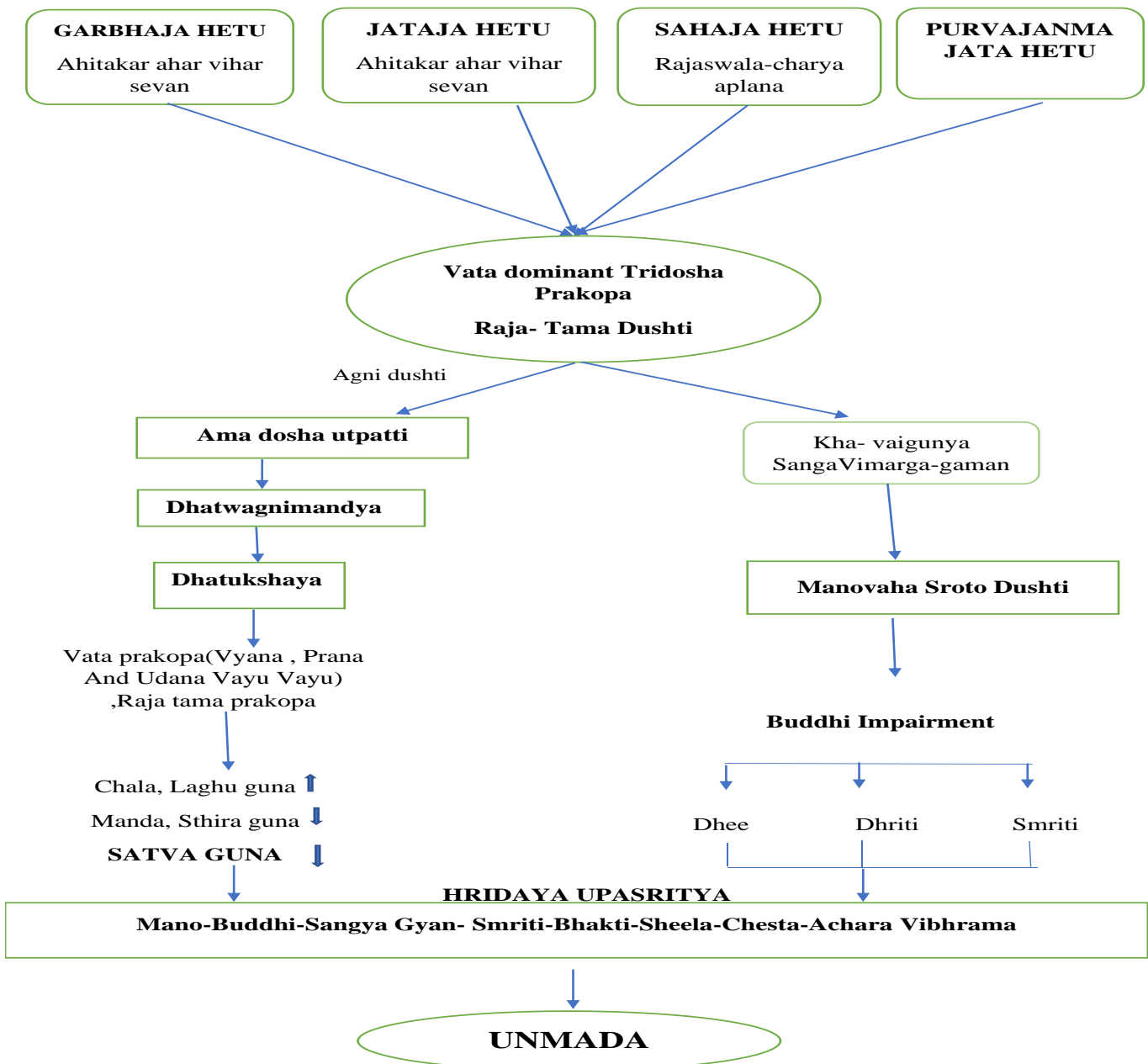
3) **Sahaja hetu (congenital factors)**- This includes all the factors involved in the morbidity of *Shukra* and *Shonita*. Vitiation in *Beeja*, *Beeja Bhaga*, *Beeja-bhaga avayava* due to *Vata* can cause congenital deformities in the child which may be a factor in developing ADHD. If *Rajaswalacharya* (menstrual regimen) is not properly followed by woman, then it affects *Aartava (sribija)*, thereby affects the child^{xxi}. All the chromosomal, hereditary or genetic problem can be corelated with above explanation as :-

4) **Purvajanmata hetu (Idiopathic factors)**- Deeds done in previous life, also have effect psychology of child^{xv,xvi}.

All the above factors combinedly or separately are responsible for vitiation of *Doshas* and thus causes the disease

SAMPRAPTI -

Fig.2 PROBABLE PATHOPHYSIOLOGY OF ADHD ACCORDING TO AYURVEDA



CHIKITSA

1) *Nidana Parivarjana*^{xxii} - By avoiding the causes of the sickness, whether they are *Ahara*, *Vihara*, or both, it aids in both its prevention and cure. Further by avoiding specific *Nidanas*, the *Nidana Parivarjana* also aids in halting the evolution of the illness. *Acharya Charaka* and *Acharya Sushruta* both recommended avoiding the causes of all diseases as the first step in treating them, as doing so also helps to ward off future illnesses. Planning an effective therapy is made easier with thorough information about *Nidana*.

2) *Yuktivyapashraya*^{xxiii} -It includes *Aushadha* and *Panchkarma* procedures.

Aushadha:- Here is increase in *Chala* and *Laghu Guna* of *Vata*, also there is reduction of *Sthira and Sthula Guna* of *Kapha*, an increase in *Tikshna* and *Laghu Guna* of *Pitta* and thus as a result child cannot focus and sit still etc. Hence to rectify this, drugs with *Manda*, *Sthira*, *Sthula guna* of *Prithvi Mahabhuta* and *Medhya Guna* required for balancing *Tridosha* and to improve cognitive functions of brain.

Some of them which are being used and can be used to treat this disease are as follows: -

Table 3. EKALA AUSHADHA

AUSHADHA	ACTION
<i>Jatamansi</i>	<i>Jatamansi</i> is <i>parthiv dravya</i> having <i>snigdha</i> and <i>medhya gunas</i> . It balances increased <i>Chala Guna</i> of <i>Vayu</i> . It has peculiar smell (<i>Gandha Guna Bahul</i>) hence, it quickly acts on mind ^{xxiv} .
<i>Ashwagandha</i>	Due to its <i>Rasa</i> , <i>Guna</i> , <i>Veerya</i> , <i>Vipaka</i> , <i>Ashwagandha</i> helps in eliminating <i>Vata</i> , by eliminating <i>Vata Dosha</i> it helps in managing ADHD. <i>Medhya-rasayana</i> like <i>Ashwagandha</i> is used to promote intellect and memory ^{xxv} .
<i>Brahmi</i>	<i>Bacopa</i> helps to maintain dopamine production. Steroidal saponine, (bacosides), the primary active principles in <i>brahmi</i> leaves. There are reference that bacosides have cognitive and nootropic effect by activation of the serotonergic and cholinergic systems and improvement of synaptic plasticity and increase the metabolism of the neurotransmitters, thus enhancing the function of the brain ^{xxvi}
<i>Mandukparni</i>	Asiatic acid (AA) is a triterpene compound found in <i>Centella asiatica</i> that can defend against reduction of neurogenesis in the hippocampus and memory deficits induced by valproic acid (VPA) ^{xxvii}
<i>Triphala</i>	<i>Triphala</i> acts as <i>Tridosha Shamaka</i> and <i>Rasayana</i> ^{xxviii}
<i>Vacha</i>	Anticonvulsant, Antidepressant, Antihypertensive, Anti-Inflammatory, Immunomodulator, Neuroprotective ^{xxix}
<i>Tagar</i>	Beneficial effect on performance and alertness ^{xxx}
<i>Shankhpushpi</i>	Neuroprotective activity, Intellect promoting activity, Antioxidant activity, Enhances memory function ^{xxxi}
<i>Guduchi</i>	Neuro-protective activity Antioxidant activity, Anti-stress activity, ^{xxxii} Learning and memory enhancing activity, ^{xxxiii}
<i>Bhilava</i>	<i>Medhya</i> , <i>smritikar</i> . The beneficial effect of nuts of SA, extracted with milk, on CNS, mainly for its locomotor and nootropic activities in different experimental animal models.

	The extract tested but a slight CNS depressant effect was noted with only 150 mg/kg of the extract and it was found to possess nootropic activity. ^{xxxiv}
<i>Lashun</i>	<i>Smriti medhavaradhak</i> . The thrombolytic and antiplatelet activity of the drugs like Mandukaparni, Brahmi, Lashuna help in dissolving the coronary thrombus. Recent studies confirm that stress can cause hypertension through repeated blood pressure elevations as well as by stimulation of the nervous system to produce large amounts of vasoconstricting hormones that increase blood pressure. Lashun alleviates <i>Kapha</i> and <i>Vata</i> , which is responsible for margavarana janya sroto dushti, thus responsible for vitiating <i>Tridosha</i> and <i>Raja- Tama dosha</i> ^{xxxv} .
<i>Madhuyashti</i>	<i>Medhya, Glabridin enhances memory, Anti-depressant</i> ^{xxxvi} ,
<i>Chitrak</i>	Antioxidant, ^{xxxvii} memory enhancing effect, CNS stimulation, ^{xxxviii}

Table 4. RASA-AUSHADHI

AUSHADH	ACTION
<i>Suvarna bhasma</i>	<i>Suvarna Bhasma</i> has <i>Madhura Rasa</i> (Prithvi+Aapa) and <i>Snigdha Guna</i> which balance <i>Chala Guna</i> of <i>Vayu Mahabhoota</i> . It improves grasping, comprehension and memory. It also gives stability (<i>Sthiratvakrita</i>) ^{xxxix} .
<i>Rajat bhasma</i>	<i>Rajat Bhasma</i> has <i>amla rasa</i> (Prithvi +Agni) and <i>Kashaya Rasa</i> (Prithvi+Vayu), <i>Snigdha Guna</i> and <i>Madhura Vipaka</i> (Prithvi+ Aapa). <i>Chala Guna</i> of <i>Vayu</i> is controlled by <i>Sthira Guna</i> and <i>Amla Rasa</i> regulates the vitiated motion of <i>Vayu</i> (<i>Vata Anuloman</i>) ^{xl} .
<i>Swarnamakshik Bhasma</i> (<i>Rasatarangini 21/29</i>)	Contains nutrients like iron and copper. Copper and iron both are essential for forming Red blood cells (erythrocytes). Copper aids in the absorption of iron in the body and iron is essential for formation of hemoglobin. <i>Rasayana</i> and <i>Vrishaya</i> . Antioxidant property, hence aids in improving mental health ^{xli} .
<i>Smriti Sagar Rasa</i> (<i>Yogaratnakar 1- Apsmara rogadohikara</i>)	It contains <i>Tamra bhasma</i> which mainly reduces <i>Kapha Dosha</i> . It detoxifies <i>Pitta Dosha</i> . It promotes a proper flow of <i>Pitta Dosha</i> due to its cholagogue action(Cholagogues stimulate gallbladder contraction to promote bile flow). Due to this action, it also pacifies <i>Pitta Dosha</i> . It possess anti-convulsant property ^{xlii} .
<i>Chaturmukha rasa</i> (<i>Bhaishajya ratnavali, VataVyadhikara</i>)	<u><i>Majja Dhatu Rasayana</i></u> : Rejuvenative to the nervous tissue <u><i>Rasayana</i></u> : Rejuvenative, alternative tonics, prevent or remove the effects of age, increase the vigour of healthy persons and cure the ailments of the sick <u><i>Vatashamana</i></u> : Pacifies <i>Vata</i> and neurological disorders <u><i>Yogvahi</i></u> : Potentiating property when co-administered with other drugs
<i>Manasmitra vatakam</i> (<i>Sahasra yoga</i>)	MMV is the potent ayurvedic herbomineral formulation contains the essential minerals and bhasmas which promotes the electric impulse at the postsynaptic region after the impairment or sensory disturbance at the locomotor region in the post epileptic treatments and hence used as the potent nerve tonic. Thus, MMV provides the scientific basis for the treatment of neurological disorders as stated in <i>Sahasrayogam</i> . ^{xliii}

Table 5. SNEHA KALPANA

SNEHA	ACTION
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<i>Ashtamangala Ghrita</i>	Used as <i>Nasya</i> and it proved its efficacy and safety in Highly significant and significant results in the management of symptoms of ADHD according to DSM-V in children by acting on <i>Manas</i> and <i>Buddhi</i> in <i>Manovaha Srotasa</i> ^{xliv} .
<i>Kalyanaka ghrita</i>	Even <i>Ghrita</i> is heavy to digest, majority circulation may go to stomach which leads to decreased flow to hyperactive brain, resulting in calmness of mind. And also, <i>Ghrita</i> will have Omega-3 and 9- essential fatty acids which are useful for cortical expansion and maturation ^{xlv}
<i>Mahakalyanak ghrita</i>	Particularly nourishing (bulk promoting) and an excellent alleviator of <i>Sannipataja rogas</i> . <i>Mahakalyanaka Ghrita</i> controls the <i>Pitta</i> and also this <i>Ghrita</i> helps in increasing the cognitive power ^{xlvi} .
<i>Mahapaishachik ghrita</i>	<i>Buddhi Smriti Kara</i> . Effective in reducing <i>Vata Dosha</i> which vitiates other doshas and causes the disease ^{xlvii} .
<i>Lashunadya ghrita</i>	Neuroprotective effects of AGE component, causes increase in expression of synaptic proteins which improves cognitive functions
<i>Brahmi ghrita</i>	BG has beneficial effect on learning and memory in the dose of 400 and 800 mg/kg body weight of normal rats in modified elevated plus maze, passive avoidance and active avoidance test. There was an apparent difference in learning and memory capacity between <i>Brahmi Ghrita</i> and piracetam, but these differences were not statistically significant. Hence, <i>Brahmi Ghrita</i> can be used as memory enhancer. ^{xlviii}
<i>Jyotishmati taila</i>	The oil of <i>Jyotishmati</i> Is <i>Ushna Virya</i> predominant and hence probably acts by dispelling the <i>Tamas</i> and vitiating <i>Kapha</i> from <i>Hridaya</i> and <i>Manovahasrotas</i> . It may also regulate the functions of <i>Alochaka</i> and <i>Sadhaka Pitta</i> , thereby improving the <i>Grahana Shakti</i> and <i>Smriti</i> . The oil is administered in form of <i>Nasya</i> ; also, being <i>Sukshma</i> , it quickly reaches to <i>Mastishka</i> and <i>Buddhindriya</i> , thus improving the intellect ^{xlix} .

Table 6. ASAVA- ARISHTA

ASAVA-ARISHTA	ACTION
<i>Sarasvatarishta</i>	<i>Sarasvatarishta</i> acts on <i>Buddhi</i> and improves in Mild cognitive impairment ^l . <i>Sarasvatarishtapre-treatment</i> for 2 wks. offered protection to animals against impairment of learning and memory by Diazepam. ^{li}
<i>Ashwagandharishta</i>	Antiepileptic activity; besides, they are having excellent anti-post-ictal depression effect. ^{lii}

PANCHAKARMA PROCEDURES: -**1) Shirodhara**

It has neuro-immuno-physio-psychological effects on the human body^{liii}. It calms the nerves, maintain *Vata*, helps in nerve rejuvenation. *Shirodhara* may help to synchronize EEG waves. It nourishes the *Indriyas* and increases blood circulation to brain so that cognitive functions and mental activity can be enhanced. It gives stability to *Mana*, increases *Dhee*, *Dhriti* and *Dharana shakti*. Since *Prana vayu*, *Mana*, *Indriyas*, *Manovaha srotas* all located in *Shira*, it may prove effective in ADHD.

2) *Nasya karma*

As the *Nasa* is the door to *Shira*(*Nasa hi Shirso Dwaram*). The drugs administered via it, reaches to *Shringataka marma*, which stimulates the nerve endings, sends impulses to the Brain, increases the blood circulation. Thus, the vitiated *Doshas* gets expelled out and nasal mucosa gets nourished. Because of its extensive blood supply, nasal tissue is a prime location for quick and effective systemic absorption. The drugs administered here stimulate the higher centres of brain which shows action on regulation of endocrine and nervous system functions^{liv}.

3) *Basti*

Basti is considered as *Ardha chikitsa* by *Acharya Charaka*. It balances *Vata Dosha*. According *Acharya Sushruta* Along with *Vata*, it controls *Pitta, Kapha, Rakta, Samsargaja* and *Sannipataja Vyadhis*. *Basti* acts on the whole body through the gut-brain axis; it works on the brain and helps reduce stress, anxiety, and depression. *Basti Dravyas* may activate the Neurohumoral transmission by stimulating the Gut-brain, regulating changes in behaviour and emotions. And also, *Rajo Guna* is more predominant in ADHD^{lv}

4) *Sarwanga Abhyanga*

Abhyanga involves massaging the body with medicated oils. It pacifies *Vata* (that resides in *Tvaka*) which is responsible for hyperactivity in children with ADHD. It increases the blood flow, relaxes the body, stress relief etc.

SATVAVJAYA CHIKITSA

The purpose of *Sattvavajaya Chikitsa* is to maintain a person's mental health as well as provide treatment for mental illnesses. The definition of *Sattvavajaya Chikitsa* is, "*Satvavajaya Punah Ahitebhyo Arthebhyo Manonigrah*"^{lvi}. *Manonigraha* refers to mental restraint or mind control. The Sanskrit verses "*Manaso Jnana, Vijnana, Dhairya, Smriti, Samadhibih*" can be used to attain mental restraint. *Gyan* (spiritual knowledge), *Vijnana* (skilled/textual knowledge), *Dhairya* (patience and willpower), *Smriti* (remembrance), and *Samadhi* are the five virtues mentioned in the verse^{lvii}

The *Sattvavajaya chikitsa* functions similarly to contemporary psychotherapy. In ancient literature, it is fully-fledged, non-pharmacological psychotherapy. The more general idea of applying the *Sattvavajaya Chikitsa's* tenets and dimensions to daily life is a technique to handle and overcome challenges in the life. Both the *Acharya Rasayana* and the *Sadvrutta* have a straightforward technique for developing a serene mindset. *Dharniya vega* is a concept that should guide our actions^{lviii}.

DISCUSSION

From the classical texts of Ayurveda (Table No.1, 2) ADHD can be correlated with *Unmada* due to there

approximately similar symptomatological manifestations. Grossly for all *Manovaha Srotas Vyadhi Nidan* can be described into three categories- *Asatmyendratha Samyoga, Pragyapradha, Parinama*.

More precisely the causative factors can be understood as *Garbhaja, Jataja, Sahaja, Purvajanmajataj Hetu*. In *Unmada* there is *Vata* dominant *Tridosha Prakopa* with *Raja- Tama Prakopa* is there. *Vata Prakopa* takes place in two conditions *Dhatushayajanya* or *Avaranjanya*, This *Prakupita Vata* will vitiates *Pitta* and *Kapha* and this will lead to *Raja Tama dushti* via vitiating *Manovaha Srotas*. *Vata Prakopa* also results into *Agnimandhyata* that leads to *Ama Utpatti* which results into *Rasa Dushti* and leads to *Dhatushaya* or *Margavarana*. Thus, vitiating *Tridosha, Raja, Tama*. These vitiated *Doshas* reaches to *Hridaya*(seat of *Mana*) and results into the disease which manifests into symptoms like *Mano Vibhrama, Buddhi Vibhrama, Smriti Vibhrama, Sheela Vibhrama, Cheshta Vibhrama* and *Achara Vibhrama*. According to *Sushruta Acharya* the main principle of treatment is *Nidana Parivarjana*, the concept is not to consume/take/do things which aggravates or cause disease. One should not indulge into *Astmyaendriyarth Samyoga* i.e. *Vata Vardhak Ahara* and *Vihara* should not be taken as this will aggravates *Vata* along with other doshas and will cause disease. According to *Acharya Charaka Pragyapradha* responsible for *Tridosha Prakopa*, It denotes a mistake in reasoning or poor decision-making. Then comes *Yuktivyapashray chikitsa*; here all doshas are vitiating but which *Dosha* is predominant has to be treated accordingly. As if one is having more symptoms of hyperactivity type of ADHD then there is *Vata* predominant, more specifically *Chala Guna* is predominant, so for treatment one has to select herbs or drug preparation which reduces *Chala Guna* of *Vata* and increases *Sthira Guna*. In both *Dhatushaya* or *Margavarana Vata Prakopa* takes place but the basic line of treatment for both is different. If *Vata Prakopa* due to former then drugs which have *Manda* and *Sthira Guna* to reduce *Vata* should be used, but if it is due to *Avaranjanya* (may be of *Meda* or *Kapha*) then first *Avarana* should be removed by either *Rookshana Chikitsa* or the drugs which have *Kapha/Meda* alleviating property and doesnot increases *Vata*. For increasing child's intellect, memory and cognitive skills, *Medhya* drugs and for nourishment *Balya* drugs should be used. *Panchakarma* therapies shows great scope in this disease. *Sneha Abhyanga* does Allievates *Vata* as it resides in *Twaka*. It also increases blood circulation which fulfils the nutritional need of the body via circulation. As there is *Raja* and *Tama Dushti*. *Nasya, Basti, Shirodhara* all allievates *Vata* and has great effect in increasing cognitive functions. As there are *Mansik Doshas* involved, counselling becomes very important to treat the disease. The application of *Sattvavajaya Chikitsa* will help our thoughts acquire a virtue-based perspective and will support the development of integrity. Ayurvedic psychotherapy, or *Sattvavajaya Chikitsa*, has the potential to be extremely beneficial to humanity. It can assist in creating a stable and consistent equilibrium between the human body, his or her thoughts, and the immediate surroundings. The service also helps people live more productive lives and reduces the prevalence of mental illnesses. This area needs more studies and researches to be done for more beneficial results. Ayurveda is not just about treating a disease; it's about treating the root cause and never happening of the same disease.

CONCLUSION

ADHD is a behavioural disorder which can be correlated with *Unmada Vyadhi* in Ayurveda. The ancient knowledge of Ayurveda will help in the diagnosis and management of *Unmada* in present era very well. As it is *Vata Pradhan Sarva dosha prakopa vyadhi*, hence the line of treatment will include from *Snehana, Svedana to Basti Karma*, then from *Shabdadi* to *Sadvrutta/Sattvavjaya Chikitsa* that reduces the *Laghu Guna* of *Vata* and increases *Sthira Guna* in body and *Medhya* drugs will increase the cognitive function of mind. Multimodal approach will be very effective in treating ADHD. Therefore, stressing on having an optimistic outlook and compassion for all life, this therapeutic approach can be used by each person to improve the standard of life.

REFERENCES

- ⁱ Fagne MS, Thakre T, Bhaskaran JK. Role of Ayurveda in Attention Deficit Hyperactive Disorder (ADHD) A Case Study. JOURNAL OF RESEARCH IN TRADITIONAL MEDICINE. 2020 Jul 7;4(5):128-.
- ⁱⁱ Saini A. THE PATTERN OF PSYCHIATRIC MORBIDITY IN AN OUT-PATIENT CHILD PSYCHIATRY CLINIC: A STUDY FROM A TERTIARY CARE CENTRE IN JAIPUR, NORTH INDIA. [\[Google Scholar\]](#)
- ⁱⁱⁱ Fagne MS, Thakre T, Bhaskaran JK. Role of Ayurveda in Attention Deficit Hyperactive Disorder (ADHD) A Case Study. JOURNAL OF RESEARCH IN TRADITIONAL MEDICINE. 2020 Jul 7;4(5):128-.
- ^{iv} Saini A. THE PATTERN OF PSYCHIATRIC MORBIDITY IN AN OUT-PATIENT CHILD PSYCHIATRY CLINIC: A STUDY FROM A TERTIARY CARE CENTRE IN JAIPUR, NORTH INDIA. [\[Google Scholar\]](#)
- ^v Yadav K, Yadav Y, Solanki G, Gupta K, Gupta J, Saini A, Patel B, Dube A. Neural Dynamics of Theta Wave in Children with Attention Deficit Hyper activity Disorder.
- ^{vi} National Institute of Mental Health. NIMH Research on Treatment for Attention Deficit Hyperactivity Disorder (AD/HD): The Multimodal Treatment Study-Questions and Answers. 2000 [\[Google Scholar\]](#)
- ^{vii} Kleigmn, Behirman. Nelson textbook of Pediatrics;. 18 ed. Philadelphia: Saunders publishers. 2008; p. 14
- ^{viii} Gameti, Rahul, et al. "AYURVEDIC MANAGEMENT OF ADHD (ATTENTION-DEFICIT AND HYPERACTIVITY DISORDER) WITH PANCHENDRIYA VIVERDHAN TAIL NASYA-A CASE STUDY." (2017).
- ^{ix} Sharma pandit Hemraj, Vidyotini Hindi Commentary Kashyap Samhita, Sutra Sthan ,Vedna-adhyay, Chaukhamba Sanskrit Sansthan Varanasi, Reprint 2018, 25/20 shlok , Pg. no. 50
- ^x Choudhary, Kuldeep, et al. "A Protocol for Systematic Review to Study the Efficacy and Safety of Ayurveda Intervention in Children and Adolescent with Attention Deficit Hyperactivity Disorder." (2019).
- ^{xi} Sharma P.V., CARAKA-SAMHITA OF AGNIVESA Part 1, Nidana sthan , Unmada-Nidana, Chaukhamba Sanskrit Pratishtan, reprint year 2017, 7/7 shlok, Pg no. 532
- ^{xii} Tripathi Brahmanand, CARAK SAMHITA OF AGNIVESA Part 2, Chikitsa sthan, Unmada chikitsa,Chaukhamba Surbharti Prakashan , 9/14 shlok Pg no. 371
- ^{xiii} Sharma P.V., CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Mahati-garbhavkranti-sharir adhyaya, Chaukhamba Sanskrit Pratishtan, reprint year 2017, 4/37-38 shlok, Pg no. 737-739
- ^{xiv} Sharma P.V., CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Katidha-purushiya-sharir adhyaya, Chaukhamba Sanskrit Pratishtan, reprint year 2017, 1/98,102 shlok, Pg no. 692-693
- ^{xv} Bhangare AN, Lahange SM, Bhatnagar V, Bhatnagar S. A REVIEW STUDY ON THE CONCEPT OF MANOVAHA SROTAS IN AYURVEDA AND ITS CLINICAL IMPORTANCE.
- ^{xvi} Sharma P.V., CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Katidhapurushiya-sharir adhyaya, Chaukhamba Sanskrit Pratishtan, reprint year 2017, 1/98-102 shlok, Pg no. 692-693
- ^{xvii} Sharma P.V., CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Sharirvichaya-sharir adhyaya, Chaukhamba Sanskrit Pratishtan, reprint year 2017, 6/23, Pg no. 758-759

- ^{xviii} Sharma P.V, CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Jaatisutriya-sharir adhyaya, Chaukhamba Sanskrit Pratishthan, reprint year 2017, 8/21, Pg no. 780-781
- ^{xix} Sharma P.V, CARAKA-SAMHITA OF AGNIVESA Part 1, Sharir sthan , Jaatisutriya-sharir adhyaya, Chaukhamba Sanskrit Pratishthan, reprint year 2017, 8/21, Pg no. 780
- ^{xx} Deave T, Heron J, Evans J, Emond A. The impact of maternal depression in pregnancy on early child development. BJOG: An International Journal of Obstetrics & Gynaecology. 2008 Jul;115(8):1043-51.
- ^{xxi} Vd. Yadavji Trikamji Acharya and Narayan Ram Acharya 'Kavyatirtha', Shukrashonitshudhisharir vyakha Adhyaya,2/25, Sharir sthan, Susruta Samhita with the Nibandhasangraha Commentary of Shri Dalhanacharya and the Nyachandrika Panjika of Shri Gayadasacharya on Nidansthan, Chaukhamba Sanskrit Sansthan, Varanasi, 2012, Pg 344.
- ^{xxii} Shastri Ambikadutta, Susruta Samhita of Maharshi Sushruta part 2 , edited with Ayurveda -Tattva-Sandipika etc, Uttar-tantra Aopdravikam-adhyahya,Chaukhamba Sanskrit Sansthan Varanasi reprint 2020, 1/25 shloka , P.g. no. 14
- ^{xxiii} Sharma P.V, CARAKA-SAMHITA OF AGNIVESA Part 1, Sutra sthan Trieshniya adhyaya, Chaukhamba Sanskrit Pratishthan, reprint year 2017, 11/54 shlok, Pg no. 178
- ^{xxiv} Shete-Mapari P, Kulkarni A. International Journal of Research in Indian Medicine. International Journal of Research. 2018 Oct;2(6th). [[Google Scholar](#)]
- ^{xxv} Mishra PK, Math PD. BRIEFF OVEREVIEW ON EFFECT OF ASHWAGANDHA ON ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN.
- ^{xxvi} Amaravathi T, Geetha PS, Murugan M, Selvam S, Kanchana S. Traditional value added products from Indian penny wort (*Centella asiatica*) and water hyssop (*Bacopa monnieri*) to alleviate ADHD.
- ^{xxvii} Amaravathi T, Geetha PS, Murugan M, Selvam S, Kanchana S. Traditional value added products from Indian penny wort (*Centella asiatica*) and water hyssop (*Bacopa monnieri*) to alleviate ADHD.
- ^{xxviii} Rani PS, Radhika I, Suryanarayana M. International Journal of Applied Ayurved Research ISSN: 2347-6362 AYURVEDIC MANAGEMENT OF ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER)-A CASE STUDY
- ^{xxix} Naderi, G.A.; Khalili, M.; Karimi, M.; Soltani, M. The effect of oral and intraperitoneal administration of *Acorus calamus* L. extract on learning and memory in male rats. J. Med. Plant 2010, 2, 46–56
- ^{xxx} Singhal HK, Neetu AK, Rai M. Ayurvedic approach for improving reaction time of attention deficit hyperactivity disorder affected children. Ayu. 2010 Jul;31(3):338.
- ^{xxxi} Niraj S, Varsha S. Role of Medhya Rasayanas (Nootropic Drugs) in Developmental Disabilities of Children. Mental retardation.;25:30.
- ^{xxxii} Niraj S, Varsha S. Role of Medhya Rasayanas (Nootropic Drugs) in Developmental Disabilities of Children. Mental retardation.;25:30.
- ^{xxxiii} Husain A, Kaushik A, Awasthi H, Singh DP, Khan R, Mani D. Immunomodulatory and antioxidant activities of fresh juice extracts of Brahmi and Guduchi. Indian J Tradit Knowl. 2017 Jul 1;16(3):498-505.
- ^{xxxiv} Farooq SM, Alla TR, Rao NV, Prasad K, Shalam K, Satyanarayana S. A study on CNS effect of nut milk extract of *Semicarpus anacardium*. *Pharmacologyonline*. 2007;1:49–63. [[Google Scholar](#)]
- ^{xxxv} Unnikrishnan V, Nishteswar K. Conceptual Considerations on the Influence of Medhya Rasayana (Nootropic Drugs) in Cardiovascular Health. JOURNAL OF RESEARCH IN TRADITIONAL MEDICINE. 2018 Feb 16;2(3):75-.
- ^{xxxvi} YASHTIMADHU- Role of Medhya Rasayanas (Nootropic Drugs) in Developmental Disabilities of Children Srivastava Niraj et.al. International Journal of Health Sciences & Research (www.ijhsr.org) 315 Vol.9; Issue: 6; June 2019
- ^{xxxvii} Tilak JC, Adhikari S, Devasagayam TP. Antioxidant properties of *Plumbago zeylanica*, an Indian medicinal plant and its active ingredient, plumbagin. Redox report. 2004 Aug 1;9(4):219-27.
- ^{xxxviii} Datta S, Mishra R. *Plumbago zeylanica* Linn.(Chitrak)-Review as rasayan (rejuvenator/antiaging). Int J Res Pharm Biomed Sci. 2012;3(1):250-67.
- ^{xxxix} Shete-Mapari P, Kulkarni A. International Journal of Research in Indian Medicine. International Journal of Research. 2018 Oct;2(6th). [[Google Scholar](#)]
- ^{xl} Shete-Mapari P, Kulkarni A. International Journal of Research in Indian Medicine. International Journal of Research. 2018 Oct;2(6th). [[Google Scholar](#)]

- ^{xli} Shrikanth AS, Jadar PG. Anti-Oxidant effects of Swarnamakshika Bhasma: A Experimental Study. *Journal of Ayurveda and Integrated Medical Sciences*. 2020 Aug 31;5(04):92-101
- ^{xlii} Saroch V, Hiremath RS, Patil PA. Anticonvulsant Activity of Apasmarari rasa–An Experimental Study. *International Journal of Ayurvedic Medicine*. 2012 Jun;3(1):48-52.
- ^{xliii} SRIKALYANI V, ILANGO K. REVIEW ON ANTI-EPILEPTIC AND ANXIOLYTIC PLANTS USED IN MANASAMITRA VATAKAM: AN AYURVEDIC HERBOMINERAL FORMULATION. *Int J Pharma Bio Sci*. 2019 Apr;10(2):71-8.
- ^{xliv} PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION OF ASHTAMANGALA GHRITA IN THE MANAGEMENT OF ATTENTION -DEFICIT /HYPERACTIVITY DISORDER (ADHD) IN CHILDREN Kingsila Manohari1 *, Prof. K. S. Patel2, Dr. V. K. Kori3, Harisha C. R.4 and Shukla V. J.5
- ^{xlv} Rani PS, Radhika I, Suryanarayana M. International Journal of Applied Ayurved Research ISSN: 2347-6362 AYURVEDIC MANAGEMENT OF ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER)-A CASE STUDY.
- ^{xlvi} Gurav A, D'souza J. A Case Report on Ayurvedic Management of Attention Deficit Hyperactivity Disorder [ADHD] in Children. *Journal of Ayurveda and Integrated Medical Sciences*. 2022 Jul 16;7(5):166-70.
- ^{xlvii} Kulamarva K, Chikkanna U, Ramakrishna KK, Bhargav H, Velayutham SG, Varambally S. Integrative approach improves fall risk and postural stability in spinocerebellar ataxia-2–A case report. *International journal of yoga*. 2022 May;15(2):168.
- ^{xlviii} Yadav KD, Reddy KR, Kumar V. Beneficial effect of Brahmi Ghrita on learning and memory in normal rat. *Ayu*. 2014 Jul-Sep;35(3):325-9. doi: 10.4103/0974-8520.153755. PMID: 26664242; PMCID: PMC4649568.
- ^{xlix} Arun Kute et al. IQ Level in Borderline Mentally Retarded Children by the Use of Brahmi Ghrita and Jyotishmati Tail Int. *J. Ayur. Pharma Research*, 2017;5(12):1-9
- ^l Shende KL, Mahajan M, Yeola G, Kulkarni PV. EFFICACY OF SHIVA GUTIKA WITH SARASWATARISHTA IN THE MANAGEMENT OF AGE ASSOCIATED MILD COGNITIVE IMPAIRMENT (AAMCI).
- ^{li} Rajopadhye BD, Sahasrabudhe RA. Memory enhancing activity of Saraswatarishta in mice. *Biomedical and Pharmacology Journal*. 2020 Dec 30;13(4):2033-9.
- ^{lii} Tanna IR, Aghera HB, Ashok BK, Chandola HM. Protective role of Ashwagandharishta and flax seed oil against maximal electroshock induced seizures in albino rats. *Ayu*. 2012 Jan;33(1):114-8. doi: 10.4103/0974-8520.100327. PMID: 23049195; PMCID: PMC3456848.
- ^{liii} Rajan S, Shamkuwar MK, Tanwar AK. Impact of Shirodhara on biological markers of stress: A case study. *J Ayurveda Integr Med*. 2021 Jan-Mar;12(1):178-181. doi: 10.1016/j.jaim.2021.01.008. Epub 2021 Feb 23. PMID: 33637424; PMCID: PMC8039348.
- ^{liv} ijapr.in was first indexed by Google in July 2013 <https://ijapr.in/index.php/ijapr/article/view/728>
- ^{lv} Sawarkar, P., Yerne, S., Mohan, M., & Sawarkar, G. (2022). Contribution of ayurveda for management of ADHD (attention deficit hyperactivity disorder): A case report. *International Journal of Health Sciences*, 6(S2), 4882500. <https://doi.org/10.53730/ijhs.v6nS2.5053>
- ^{lvi} Sharma P.V, CARAKA-SAMHITA OF AGNIVESA Part 1, Sutra sthan Trieshniya adhyaya, Chaukhamba Sanskrit Pratishthan, reprint year 2017, 11/54 shlok, Pg no. 178
- ^{lvii} Sharma P.V, CARAKA-SAMHITA OF AGNIVESA Part 1, Sutra sthan Deerghanjivitiya adhyaya, Chaukhamba Sanskrit Pratishthan, reprint year 2017, 1/58 shlok, Pg no. 34
- ^{lviii} Prashant DT, Rajesh K, Mahendra B. EMPOWERMENT OF MENTAL HEALTH THROUGH SATTVAJAYA CHIKITSA doi: 10.46607/iamj12p5052021 | IAMJ June - July 2021