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## EFFECTS OF AYURVEDIC THERAPY FOR THE MANAGEMENT OF AUTISM IN CHILDREN: A REVIEW

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**ABSTRACT: Introduction:** Autism is a group of psycho-neuro-developmental diseases in which children fail to acquire social interaction and other regular motor and verbal milestones, and some developmental issues are suspected. According to recent reports, prevalence rates have risen drastically from 4-6/10,000 in the early 1960s to 40-60/10,000 now. According to Ayurvedic literature, *Unmada* is a term for psychotic issues that encompasses many mental conditions, including autism. **Aims and Objectives:** Critical review and analysis of the effects of various conventional Ayurveda treatment modalities in the management of Autistic children. **Material and Methods:** Various Ayurveda classics and studies published in journals, as well as PubMed, and Medline databases related to effect of Ayurveda drugs, therapeutic process, and supportive therapy in management of Autistic children, are reviewed and appraised. **Review Results:** Multimodal management approach of an Ayurveda comprising the herbal supplements, Ayurveda Compounds, *Abhyangam*, *Shiropichu*, *Shirolepa* and a very specific, controlled and wholesome diet and *Sattvavajaya chikitsa* (Psychotherapy) with supportive therapy. These Ayurveda therapeutic approaches are used to manage autism with respect to psychosomatic disorder *Unmada*. **Discussion:** These treatments benefit autistic children by a different mechanism of action and improve their quality of life. **Conclusion:** The children with autism can become functional with the help of Ayurveda medicine supplementation, contributing members to their families and communities and their lives become better than before.

**INTRODUCTION:** Autism is a heterogeneous set of psycho-neurodevelopmental disorders that persists throughout the longevity of the individual whose definite etiology is still unknown. These developmental disorders are first suspected when the child fails to develop social interaction and other typical motor and language milestones.

With little variations, children present with cognitive impairment, socialization skills with typical behavioral peculiarities and speech and language deficits<sup>1</sup>. Autism spectrum disorder (ASD) is a multifactorial disorder resulting from genetic and non-genetic risk factors and their interaction.

There is a high recurrence risk (2-19%) for autism among siblings and a higher concordance rate (37-90%) in twin studies. Other risk factors are closer spacing of pregnancies, advanced maternal or paternal age, extremely premature birth (<26 weeks gestational age) and family members with learning problems, psychiatric disorders and social disability.

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The male-female ratio is estimated to be 4:1. ASD is more common in males, but in a recent meta-analysis, the true male-to-female ratio is closer to 3:1 than the previously reported 4:1<sup>2</sup>. The incidence of ASD may be higher in immigrant populations<sup>3</sup>. According to recent reports, prevalence rates have changed dramatically from 4-6/10,000 in the early 60s to 40-60/10,000 according to recent reports<sup>4</sup>. Due to these main reasons, *i.e.*, awareness and diagnosis are much more prevalent and sophisticated, more than ever, the fetus and developing infants are exposed to chemicals, women have children later in life, and genetics, this prevalence has increased more than tenfold over the past 20 years<sup>5</sup>.

The Diagnostic and Statistical Manual of Mental Disorders (DSM) provides the standard language by which clinicians, researchers, and public health officials in the United States communicate about mental disorders. The current edition of the DSM, the fifth revision (DSM-5)<sup>6</sup>, was published in May 2013. The DSM-5 classification also adds new clinical signs of stereotypical speech and also hyperreactivity or hyporeactivity to sensory input or interest in sensory aspects of the environment. According to different causes, autism is of two types: primary autism with an unknown cause and secondary autism.

In primary autism with unknown cause, diagnosis is made when there are impairments in reciprocal social interaction, communication, repetitive behaviour/restricted interest, and stereotyped patterns of behaviours or interests prior to the age of 3 years. But in secondary autism, there are found many causes which are associated with perinatal disorders (like rubella, encephalitis, cerebral palsy) and also with known genetic causes/metabolic errors (like fragile x syndrome, congenital infections secondary to rubella and cytomegalovirus, phenylketonuria, tuberous sclerosis)<sup>7-13</sup>.

As per Ayurveda literature, *Unmada* is a term for psychotic problems that include many mental illnesses and covers autism. The symptoms of *Unmada* are the derangement in the *Manas* (mental functioning), *Buddhi* (application of acquired knowledge), *Samjna* (perceptions), *jnana* (experiences), *Smriti* (memory), *Bhakti* (emotional

adhesions), *Seela* (conditioned activities), *Chesta* (behaviour) and *Achara* (socio-cultural activities)<sup>14</sup>. The clinical features of autism merge well with that of *Unmada*.

**Causes of Autism**<sup>15</sup>: As per Ayurveda, the causes of Autism (*Unmada*) are *Beejadoshha* (Genetic alteration, mutation), *Aharadosha* (Indulgence in highly *Vata* vitiating diet and deeds immediately after conception) such as *Viruddhahara* (incompatible foods), *Viharadosha* (Inappropriate schedules), *Manaabhighata* (Injury to cerebrum during delivery may result in cerebral palsy), *Vaikarikabhava* such as *Bhaya*, *Kopa*, *Shoka* and *Harsha* (Emotional factors such as fear, anger, sorrow, pleasure *etc.*), unfulfilled desires in *Dauhrida* may hurt the mind in fetus.

**Pathophysiology**: According to the fundamentals of Ayurveda, *Samprapti* (pathogenesis) of any disease comprises the vitiated *Dosha-Dushya* (*union*) *Sammurchhana*. These vitiated components are manifested in full blown disease, when they exacerbate with already existing '*Khavaigunya*'<sup>16</sup> (structural and functional alteration of body tissues/system *etc.*). The aggravated *Dosas* become *Unmargami* (leave their place and reach the upper channels of the body) *i.e.*, produce symptoms<sup>17</sup>. Vitiating of *Tridoshas* and *Rajas* and *tamas* lead to vitiating of *Manovaha Srotas*, which disturbs mental emotions and produce *Unmada*. When prominence of *Kapha Dosha*, then it is called *Kaphaja Unmada*. Symptoms of *Kaphaja Unmada* are staying in an unchanged position, silence, least movements, loss of appetite, liking of loneliness, disliking for cleanliness, excessive sleep, white colour, and stickiness in eyes<sup>18</sup>, which is specifically similar to Autism symptoms.

**AIMS AND OBJECTIVES**: Critical review and analysis of the effects of various conventional Ayurveda treatment modalities in the management of Autistic children.

**MATERIAL AND METHODS**: Various Ayurveda classics and studies published in journals and PUBMED, MEDLINE database related to the effect of Ayurveda drugs, therapeutic process, and supportive therapy in the management of Autistic children are reviewed and appraised.

**Review Results:** Ayurveda has a lot of potential for training psychiatric and behavioural disorders with plant-based medications and *Panchakarma* therapies that don't harm the body's growing condition<sup>19</sup>.

All these objects can be achieved by multimodal management approach of an Ayurveda comprising the Drug therapy (*Shamana* therapy and *Shodhana* therapy) and *Sattvavajaya chikitsa* (Psychotherapy). These Ayurveda therapeutic approaches are used in the management of autism with respect to psychosomatic disorder *Unmada*.

**Drug Therapy:** Autism is a complex neurodevelopmental disorder where Ayurveda drug preparations are used in *Shamana* therapy and *Shodhana* therapy.

**Shamana Therapy:** *Shamana* therapy of autism (*Unmada*) includes *Deepana*, *Pachana* (Drugs and procedures that promote digestion), and *Snehapana* (internal oleation use of medicated ghee). The *Ghrita* preparations most commonly used in the management of Autism are *Kallyanaka Ghrita*, *Mahakallyanaka Ghrita*, *Jivanthyadi Ghrita*, *Siddharthak Ghrita*, *Mahapaishachika Ghrita*,

*Lashunadda Ghrita*<sup>20</sup>. Essential fatty acids (EFAs) are beneficial in nearly 30% of children with autism<sup>21</sup>. The consumption of EFAs for autism spectrum disorder designates a relationship between neuron function improvement and regeneration. It gives satisfactory outcomes and quantifiable improvements in the language and learning skills of autistic children<sup>22</sup>. In autistic children, several herbs are recommended, including *Guduchi*<sup>23</sup>, *Aamalaki*<sup>24</sup>, *Pippali*<sup>25</sup>, *Trikatu*<sup>26</sup> which provide digestive support. It is well recognized that bidirectional communication between the gut, the immune system, and the brain. For example, psychological stress can induce changes in gastrointestinal microbes. However, intestinal bacteria can directly communicate with the central nervous system through the vagal sensory nerve fibers and the peripheral immune system. The drugs which act as probiotics can be useful to restore the microbial balance in the intestine, relieve gastrointestinal problems and attenuate immunological abnormalities<sup>27</sup>. According to their Pharmacological properties, some drugs which can be used in Autistic children are given the following.

**TABLE 1: PHARMACOLOGICAL PROPERTIES OF THE SINGLE HERBAL DRUGS USED IN AUTISM AS PER AYURVEDA**

S. no.	Drug Name	Karma	Therapeutic Uses	Pharmacological Action
1	<i>Mandukaparni</i> <sup>28</sup> ( <i>Centella asiatica</i> )	<i>Kaphapittahara</i> , <i>Balya</i> , <i>Deepana</i> , <i>Hridya</i> , <i>Medhya</i> , <i>Varnya</i> , <i>Visaghna</i> , <i>Svarya</i> , <i>Rasayana</i> , <i>Ayushya</i> , <i>Smritiprada</i>	<i>Shotha</i> , <i>Aruchi</i> , <i>Jwara</i> , <i>Kasa</i> , <i>Kandu</i> , <i>Kushtha</i> , <i>Prameha</i> , <i>Raktapitta</i> , <i>Shwasa</i> , <i>Pandu</i> , <i>Rakta Dosha</i>	Cognitive and antioxidant properties <sup>29</sup> , Antidepressant <sup>30-31</sup> , Antinociceptive and anti-inflammatory <sup>32</sup> , Memory Enhancing <sup>33</sup> , Immunomodulating <sup>34-35</sup>
2	<i>Yastimadhu</i> <sup>36</sup> ( <i>Glycyrhiza glabra</i> )	<i>Vatapittajit</i> , <i>Balya</i> , <i>Chakshushya</i> , <i>Vrishya</i> , <i>Varnya</i> , <i>Raktaprasadana</i>	<i>Kasa</i> , <i>Kshaya</i> , <i>Svarabheda</i> , <i>Vatarakta</i> , <i>Vrana</i>	Antioxidant <sup>37</sup> , Regulation of gastrointestinal motility <sup>38</sup> , Anti-inflammatory <sup>39</sup> , Immuno-stimulating <sup>40</sup> , learning and memory <sup>41-42</sup> , Antidepressant <sup>43-44</sup> , Antistress <sup>45</sup> , Hepatoprotective and anti-hepatocarcinogenic <sup>46</sup> , Anticonvulsant <sup>47</sup>
3	<i>Guduchi</i> <sup>48</sup> ( <i>Tinospora cordifolia</i> )	<i>Tridoshashamaka</i> , <i>Balya</i> , <i>Deepana</i> , <i>Rasayana</i> , <i>Sanghrahi</i> , <i>Raktashodhaka</i> , <i>Jwaraghna</i>	<i>Jvara</i> , <i>Kushtha</i> , <i>Pandu</i> , <i>Prameha</i> , <i>Vatarakta</i> , <i>Kamala</i>	Effect on Stress, Learning and Memory <sup>49-52</sup> , Antioxidant <sup>53-54</sup> , Anti-inflammatory <sup>55</sup>
4	<i>Shankhapushpi</i> <sup>56</sup> ( <i>Convolvulus pleuricaulis</i> )	<i>Kapha-pittahara</i> , <i>Balya</i> , <i>Ayushya</i> , <i>Medhya</i> , <i>Rasayana</i> , <i>Mohanashaka</i>	<i>Manasaroga</i> , <i>Apasmara</i>	Effect on learning, memory and behaviour <sup>57</sup> , Anxiolytic <sup>58-60</sup> , Antidepressant <sup>61</sup> , Antistress <sup>62</sup> , Brain nourishment <sup>63</sup>
5	<i>Brahmi</i> <sup>64</sup> ( <i>Bacopamonniera</i> ),	<i>Kaphahara</i> , <i>Medhya</i> , <i>Rasayana</i> , <i>Svarya</i> , <i>Vatahara</i> , <i>Visahara</i> ,	<i>Kushtha</i> , <i>Jvara</i> , <i>Shophya</i> , <i>Pandu</i> , <i>Prameha</i> ,	Cognitive properties <sup>65-66</sup> , Antidepressant <sup>67</sup> , Anxiolytic effect <sup>68</sup> , Memory enhancer <sup>69</sup>

6.	<i>Vacha</i> <sup>70</sup> ( <i>Acoruscalamus</i> )	<i>Ayusya, Matiprada, Prajasthapana, Mohahara Deepana, Krimihara, Kanthya, Kaphahara, Medhya, Vatahara, Mala Mutravishodhana, Vjmaka</i>	<i>Manasavikara Shoola, Apasmara, Svasa, Kasa, Vibandha, Unmada, Adhmana, KarnaSrava, SmritiDaurbalya.</i>	Anticonvulsant Effect <sup>71</sup> , Antidepressant Effect <sup>72</sup> , Neuroprotective Effect <sup>73</sup> , Antioxidant Effect <sup>74</sup>
7.	<i>Kushtha</i> <sup>75</sup> ( <i>Saussurea lappa</i> )	<i>Kaphavatajit, Raktashodhaka, Varnya, Sukrala</i>	<i>Svasa, Kasa, Kushtha, Vatarakta, Visarpa</i>	Anticonvulsant Effect <sup>76</sup> , Gastro-protective effect <sup>77</sup> , Anti-inflammatory effect <sup>78</sup> , Spasmolytic effect <sup>79</sup>
8.	<i>Ashwagandha</i> <sup>80</sup> ( <i>Withania somnifera</i> )	<i>Rasayana, Vatakaphapaha, Balya, Vajikarana</i>	<i>Shotha, Ksaya, Daurbalya, Vataroga, Klaibya</i>	Improving memory and Cognitive Functions <sup>81-82</sup> , Treating Neurodegenerative disorders <sup>83</sup>
9.	<i>Jyothishmati</i> <sup>84</sup> ( <i>Celastrus panniculatus</i> )	( <i>Prabhava: Medhya</i> ), <i>Sirovirecanopaga, Deepana, Kaphahara, Vamaka, Vatahara, Virechaka, Medhya</i>	<i>Vatavyadhi, Smritidaurbalya, Svitra.</i>	Effect on the learning and memory <sup>85</sup> , Anti-depressant effect <sup>86</sup> , Cognitive properties and Antioxidant effect <sup>87</sup> , Neuroprotective effect <sup>88-89</sup> , Anti-anxiety activity <sup>90</sup> , Anxiolytic potential effect <sup>91</sup>
10.	<i>Kushmanda</i> <sup>92</sup> ( <i>Benincasa hispida</i> ),	<i>Balya, Deepana, Hridya, Vrisya, Bastishodhaka, Mehana, Tridosahara, Jirnanga, Pusti Prada, Bastishodhaka, Sramsana, Arochakahara, Vatapittajit</i>	<i>Mutraghata, Mutrakricchra, Prameha, Trishna, Ashmari, Manasa Vikara, Malabandha</i>	Anti-depressant activity <sup>93-94</sup> , Antioxidant Activity <sup>95</sup>
11.	<i>Jatamansi</i> <sup>96</sup> ( <i>Nardosta chysjatamansi</i> )	<i>Medhya, Tridoshanut, Varnya, Nidrajanana, Kushaghna.</i>	<i>Daha, Kushtha, Visarpa, Manasaroga, Anidra</i>	Improve learning and memory <sup>97</sup> , Anti-depressant activity <sup>98</sup> , stress modulating Antioxidant effect <sup>99</sup> , Cognitive impairment <sup>100</sup>

TABLE 2: PHARMACOLOGICAL PROPERTIES OF THE DRUGS USED IN AUTISM AS PER AYURVEDA

S. no.	Drugs	Descriptions
1	<i>Saraswat Churna</i>	A total of 50 Geriatric Depression patients were randomly selected for the clinical investigation, based on the DSM-IV-TR diagnostic criteria for depression and their level of depression as measured by the Geriatric Depression Scale (GDS-30). Thirty patients were given <i>Saraswata Churna</i> (Group-A), while the other twenty were given Citalopram as a control (Group-B). The treatment trial lasted three months. The Hamilton Depression Rating Scale (HDRS) was employed to assess medication response <sup>101</sup>
2	<i>Saraswatarishta</i>	Animals were protected from Diazepam-induced learning and memory impairment by <i>Saraswatarishta</i> pre-treatment for two weeks. It can be employed as a preventative measure to overcome dementia in Alzheimer's disease, according to this observation. <i>Saraswatarishta</i> was not found to improve learning or memory in either a single dosage or a two-week continuous treatment. More research is planned to determine how <i>Saraswatarishta</i> affects Alzheimer's disease patients in order to confirm its favourable effects on demensia <sup>102</sup>
3	<i>Panchagavya Ghrita</i>	The study's goal was to evaluate <i>Panchagavya Ghrita's</i> efficacy in treating OCD to supportive psychotherapy. The study used a randomised controlled experiment with a sample size of 20 people, and the assessment was done using the Yale Brown Obsessive Compulsive Scale. There were substantial differences between the trial and control groups. However, there was no statistical significance when comparing the two groups <sup>103</sup>
4	<i>Kalyanaka Ghrita</i>	It is said to help with personality disorders, insanity, cough, epilepsy, diseases caused by sinful deeds, anaemia, itching, poison, consumption, delusion, Diabetes mellitus, artificial poison, fever, scanty semen volume, infertility, in those whose minds have been influenced by gods, those with poor intelligence, stammering speech, who desire good memory, and those with poor digestive power. Strength, auspiciousness, long life, complexion, fortune, and sustenance are among the benefits it bestows. This is ideal for <i>Pumsavana</i> (male progeny treatment) <sup>104</sup>
5	<i>Suvarnaprashana</i>	<i>Suvarnaprashana</i> is a comprehensive <i>Rasayana Chikitsa</i> , administered for the physical, mental, intellectual and spiritual wellbeing of the children <sup>105</sup>

**Shodhana Therapy**<sup>106</sup>: *Shodhana* therapy is used in autistic children and *Shamana* therapy provide very significant effects. It consists of *Abhyangam* (oil massage), *Mridushodhana* (mild body purification by emesis or purgation), *Siropichu* (overhead application of special oil), *Sirodhara* (continuous pouring of specific oil over the forehead), and *Sirolepam* (medicinal paste application overhead region). The application of *Abhyangam* early in the morning can have massive health benefits (both physical and mental in the case of Autistic children)<sup>107</sup>. *Mridu Shodhana* (mild body purification by purgation) helps flush out toxins from the body and improves the whole functioning of all organ systems in the body. It also has a curative effect on the vitiated Doshas of *Pitta* and *Kapha*, thus secondarily affecting the *Rajo* and *Tamo Mano* Doshas. This leads to improved psychological aptitude in a person's approach to dealing with stressful conditions<sup>108</sup>. *Shodhana* therapy in the form of *Basti* preceded by *Snehana* and *Swedana* is used to manage the *Rasadusti* in the body, which is present throughout the body<sup>109</sup>.

In autistic children, *Shiropichu* has a greater effect. It's one of the most effective ways to relieve stress and anxiety. *Taila* is used in *Shiropichu* because it has a high density and a longer contact time. Due to *Sukshma*, *Ushna* & *Vyavayi* properties of *Taila*<sup>110</sup> it penetrates easily into *Manovahasrotas*, correcting vitiation of *Manas* Doshas (*Raja* & *Tama*). *Brimhana*, *Balya*, *Vata Shamana*, and *Medhya* qualities of *Taila* simultaneously correct all *Manas Vikaras*.

**Sattvavajaya Chikitsa (Psychotherapy)**: *Sattvavajaya chikitsa* is thought to be working on enhancing cognitive abilities in regularizing emotional discrepancy. Different methods used in the achievement of *Sattvavachaya* in Autistic children include<sup>111</sup> *Bandhana* and *Tamogriha Rodhana* (Detention in dark rooms- those who are attacking in nature), *Tarjanam* (admonishment), *Trasanam* (frightening), *Danam* (rewards, reinforcement), *Harshanam* (delighting), *Santwanam* (pacification), *Vismayam* (mystic). These methods are useful to get back these different mental abilities like *Gyana* (True knowledge of self-behaviour), *Vigyana* (Specific Knowledge), *Dhairya* (Patience), *Smriti* (Memory), *Samadhi*<sup>112</sup> (Mental equanimity), *Dharaniya Vega*

*Dharana*<sup>113</sup> (Mental urge control), *Ahitanam Anupasevana* and *HitanamUpasevana*<sup>114</sup> (withdrawal of unwholesome regimens and adoption of wholesome regimens) deranged in Autistic children to normalcy. The factors that help the mind make a stable, firm and right decision with interest in having a healthy body status that is *Samyak Artha Grahana* are *Dhee*, *Dhriti*, and *Smriti*. The factors that help the mind make a stable, firm and right decision with interest in having a healthy body status that is *Samyak Artha Grahana* are *Dhee*, *Dhriti*, and *Smriti*.

**Supportive Therapies**<sup>115</sup>: Supportive therapies should be focused on (in young kids) language, speech, special education, parent education, training, and support. In an older child / Adolescent (with relatively higher intelligence) but poor social skills. So, psychotherapy and behavioural therapy are required. Working with families of Autistic children is vital. In general, services/care for the autistic child are the following:

1. Early (started before 3 years age child) intensive behavioural and educational rehabilitation.
2. Use of visual structures for optimal education.
3. Childhood Autism Rating Scale (CARS),
4. Multidisciplinary training for all professionals.
5. Methods are adapted for spontaneous language improvement.
6. Hold in a language increases communication, increases communication, and decreases the tendency of autism.
7. Psychotherapy.
8. Social skill training.
9. Vigorous aversion therapy
10. Auditory integration training is also hopeful.

**Pathya and Apathya (Wholesome & Unwholesome diet and habit) for Autism (Unmada)**<sup>116</sup>: The foods indicated for Autism (*Unmada*) are Cow's milk, *Goghrita*, Good sleep, *Puran Shali* (old rice paddy), *Shashtik* (Rice), *Draksha* (Grapes), *Yava* (Barley), *Lajasaktu*

(roasted parched paddy powder) *etc.* and are contraindicated for autism are alcohol, pungent and spicy food, penetrative and irritant food, irritating, insulting incidences and activities, suppression of natural urges, incompatible and polluted food, sleeplessness.

**DISCUSSION:** Autism is a pervasive developmental disorder that impairs the ability to communicate and interact or form relationships with other people. With the help of Ayurveda management, patients with autism can become functional, contributing members to their families and communities. According to Ayurveda, the management of autism is based on the motive to reduce the effect of 'Khavaigunya' by restoring the functions of other pathological markers. Vitiating *Sharira Doshas* and *Manas Doshas*, which in turn, may be helpful in reducing problematic behaviour that would be adaptive at lower rates and maintain this adaptive behaviour for longer duration. In addition, it may help acquire new skills of learning and communication.

Drug therapy (*Shamana* therapy and *Shodhana* therapy) and *Sattvavajaya chikitsa* (Psychotherapy) are used for management of autistic children. *Shamana* therapy pacifies *Doshas* of the body and does not expel them from tissues, similar to vomiting or purging. Herbal supplements are used to improve cognitive function, language, and learning skills. Medicated *Ghruta* preparations are used in autism which absorb and readily enter the brain through the blood-brain barrier. The selection of a particular *Ghruta* preparation is decided based on two things. Primarily you have to decide whether the selected *Ghruta* is indicated for psychological Disorders. Secondly, the selected ghee should improve the foremost humor of the specific clinical subtype of autism. Managing the immune system needs of autistic children by using Ayurvedic theories requires a constant focus on sustaining proper immune function. Probiotics have been shown to support immune system function and digestive support.

This is critical for autistic people because many have shown signs of impaired or reduced immune systems. *Shodhana* therapy expels *Doshas* from tissues and cells (at the micro-level), similar to emesis or purging or by both actions. The *Doshas*

are metabolized by the liver and excreted from the body. Ayurveda also proceeds into a description of autism caused by microbial infestation, which can give rise to endotoxins in the child's body. When the microbial infestation reaches the brain, then disruption of the brain functions is done by attacking nerve cells and causes deterioration of the child's developmental skills<sup>117</sup>.

With the help of *Shodhana* therapy, the endotoxin produced by microbial infestation is removed, and autistic children are improved their brain function. *Abhyangam* (Oil massage) provides significant relief to patients suffering from anxiety and depression because these therapies have a soothing effect on the nervous system, relax the tensed muscles, and increase blood circulation. *Shiropichu* (Pouring of specific oil over the forehead) and *Shirolepa* (medicinal paste application overhead region) are done to enhance the concentration of the mind continuously in autistic children by the proper functioning of the nervous system. In comparison to other body regions, the skin over the scalp is thin, and absorption is faster and more from the scalp. *Shiropichu's* local effect is determined by the type of medicine utilized during the operation and drug cellular absorption via the transdermal route. According to modern medicine, local application, such as ointment, passes through the stratum corneum into the blood artery and reaches the proper organ.

Similarly, the oil on the forehead is rapidly absorbed and reaches the brain's cortex. It increases circulation by rectifying cerebral circulation, which is critical in times of stress. Therefore, *Abhyanga*, *Shiropichu* and *Shirolepa*, and *Shamana* therapy are very useful in autistic children.

*Sattvavajaya chikitsa* (Psychotherapy) mainly aims to control the mind, regularize the functions of the mind, and prevent the mind from those factors that disturb its functions. The mind should be educated and trained to avoid and desensitize unwholesome factors to the self (mind and the body) and society. Therefore, the mind has to decide which is good and bad as soon as it gets exposed to the external environmental hazards and takes a decision within no time by keeping interested in the body's health status.

Children with autism have difficulty and lack interest in interacting and communicating with other people. Hence, proper function with the integrity of these three cognitive elements (*Dhee*, *Dhriti*, and *Smriti*) enables the mind to work at its best. Direct knowledge is provided by a consequence of the conjunction of soul, mind, sense organ, and their objects, but merely after the mediation of *Buddhi*<sup>118</sup>. Memorization (*Smriti*) is a function carried out by *Udana Vayu*. However, in an older autistic child, working memory functions are realized extensively upset, while long-term memory may remain intact due to repetitive maintenance practice. This may be suggestive of the ongoing degradation of *Udanavayu*. Derangement of *Udana Vayu* is responsible for speech impairment also<sup>119</sup>. As cognitive function represented by *Sadhaka Pitta 120* can be denoted in the form of *Buddhi* and *Medha*, the function of emotional and social cues is represented as *Bhaya*, *Shaurya*, etc. Along with Ayurveda management, it is more beneficial for autistic children when we give supportive therapies. These supportive therapies improve cognition, communication, IQ, language, academic performance, adaptive and social functioning and decrease inappropriate behaviours such as aggression, hyperactivity, and temper tantrums.

*Pathya Aahara* and *Vihaara* (Wholesome & Unwholesome diet and habit) are invariably a part of management. Specific types of food, i.e., dairy products, nightshade vegetables (tomatoes, eggplant, potatoes, and peppers), citrus fruits, peanuts, preservatives, colours, food additives, insecticides, pesticides and heavy metals are thought to contribute to the significant impact on symptoms associated with autistic children. Autistic children are also more expected to suffer from food sensitivities resulting from improper digestion of foods, frequently resulting from weakened digestive and immune systems. This often causes incompletely digested food to move into the bloodstream, causing an autoimmune attack and a response comparable to an allergic reaction. Naturally occurring probiotics have demonstrated the ability to promote healthy digestion and strong immune system function<sup>121</sup>.

**CONCLUSION:** Present review study shows that ayurvedic management with supportive therapies

provides a good response in autistic children. Autism disturbs normal brain functions, impacting brain areas responsible for social interaction and aggression. Currently, in modern medicine, a permanent cure for autism does not exist; research has provided several useful findings to assist with managing the symptoms associated with autism. Through the strategic practice of Ayurveda medicine supplementation like Herbal supplements, Ayurvedic Compounds, *Abhyangam*, *Shiropichu*, *Shirolepa*, and a very specific, controlled, and wholesome diets, patients with autism can become functional, contributing members of their families and communities and their life become better than before. Hence, traditional approaches in the form of drug therapy (*Shamana & Shodhana*) and *Sattvavajaya Chikitsa* (Psychotherapy) and supportive therapies like intensive behavioural and educational rehabilitation are highly beneficial in the management of autistic children.

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