

## The Useful Diet and Medicinal Plants for ADHD from the Viewpoint of Traditional Persian Medicine

Haide Golsorkhi<sup>1</sup>, Mohammad Kamalinejad<sup>2</sup>, \* Majid Dadmehr<sup>1</sup>

<sup>1</sup> Department of Traditional Medicine, School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran.

<sup>2</sup> School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

### Abstract

The number of children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) is increasing significantly. Common treatment options mainly include pharmacotherapies, as well as behavioral and psychosocial treatments applied separately or in combination. Currently, however, there is an increasing trend in the use of complementary and alternative medicines (CAM) in children with ADHD. A significant number of parents of children diagnosed with ADHD prefer to use CAM alone or in combination with current pharmacotherapies for their children's symptoms.

Palliative interventions on ADHD patients lead to symptomatic reliefs, which can greatly improve the quality of life among these patients. According to the viewpoints of traditional Persian medicine, there are several nutritional advice and medicinal herbs, recommended for palliating ADHD and improving the patients' quality of life. In this article we present some recommended medicinal plants for these patients, and the suggested changes in their lifestyle, especially in the dietary programs.

**Key Words:** Attention Deficit Hyperactivity Disorder; Diet; Medicinal plants; Traditional medicine.

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### \* Corresponding Author:

Majid Dadmehr, Department of Traditional Medicine, School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran. Email:majiddadmehr@yahoo.com.

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*Dear Editor,*

Attention deficit hyperactivity disorder (ADHD) is commonly recognized as a neurodevelopmental disease in children and adolescents, which puts a huge economic burden on societies. Its prevalence rate equals to 5–7% in school-aged children worldwide (1, 2). Briefly, a range of clinical manifestations, including inattention, hyperactivity, impulsivity, along with comorbidities such as obesity and sleep disorders have been observed in these children. Sleep problems in ADHD children are almost fivefold more than in the healthy population. In addition, treatment-induced sleep 'disorder' including reduction in total sleep time, decreased sleep efficiency, insomnia, and drowsiness have been reported among them (3).

Common treatment options mainly include pharmacotherapies, as well as behavioral and psychosocial treatments applied separately or in combination. Currently, however, there is an increasing trend in the use of complementary and alternative medicines (CAM) in children with ADHD. A significant number of parents of children diagnosed with ADHD prefer to use CAM alone or in combination with current pharmacotherapy for their children's symptoms. Palliative interventions on ADHD patients have led to symptomatic reliefs, which can greatly improve the quality of life (QOL) in these patients (4, 5). Although the exact term of ADHD is not stated as a distinguished disease in the manuscripts of the traditional Persian medicine (TPM), considering its symptoms and signs, there seem to be

some similarities in the clinical manifestations of ADHD and some types of diseases mentioned in TPM sources. One of them is “*da'f-I dimāqh*” (brain weakness), which is characterized by symptoms of brain dysfunction such as restlessness, difficulty concentrating, sleep disorders and impulsive behavior. In this condition, an accumulation of waste products occurs in the brain due to its inability to excrete them, and results in brain dystepmrament. Therefore, using brain tonics, which are called “*muqawwiyat-i dimāqh*”, can be helpful in improving these symptoms. There are several nutritional advice and medicinal herbs for the management of brain weakness, which can also be used for palliating ADHD symptoms and improving the patients' QOL. Some medicinal plants that are brain tonics are shown in **Table 1**. These plants with strengthening effects on the central nervous system are considered mood and memory enhancers (6, 7). Recent studies have demonstrated the neuroprotective effects of such plants and their impacts on improving the memory functions (8).

Moreover, we presented some dietary programs and appropriate changes in patient's lifestyle, which will be also supportive for other symptoms such as obesity and sleep disorders in these patients (6,7, 9) (**Table 2**). However, more clinical studies are required to evaluate the effectiveness of them.

#### **Conflict of interest**

None.

**Table-1:** Some useful herbal brain tonics for the management of ADHD in TPM

Scientific name	Common name	Part of material	Temperament	Therapeutic properties
<i>Citrus medica</i> L.	Citron	Yellow skin	Hot & Dry	Tonic for the heart, brain, liver, and stomach
<i>Lavandula angustifolia</i> Mill.	Common lavender	Leaves, flowers, flower essential oil, flower water (hydrosol)	Hot & Dry	Tonic for the nerves, memory, heart, stomach, and body organs
<i>Myrtus communis</i> L.	Myrtle	All parts especially leaves and its essential oil	Cold & Dry	Tonic for the, heart, and brain
<i>Melissa officinalis</i> L.	Lemon balm	Leaves, seeds, balm water (hydrosol)	Hot & Dry	- Tonic for the nerves and memory - Hypnotic and analgesic activities.
<i>Salix aegyptiaca</i> L.	Goat willow	Flower, willow water (hydrosol), essential oil.	Cold & Wet	Tonic for the heart and brain
<i>Cydonia oblonga</i> Miller	Quince	Flowers, fruits, fruit seeds	Moderate & Dry	- Tonic for the principal organs - Appetizer
<i>Malus domestica</i> Borkh	Apple	Leaves, flowers, fruits.	Hot & Wet (Sweet apples)	Tonic for the principal organs.
<i>Rosa canina</i> L.	Dog rose	Flowers, fruits, flower oil and flower water (hydrosol)	Hot & Dry (Flowers) Cold & Dry (Fruits)	Tonic for the heart, liver and brain.
<i>Vitis vinifera</i> L.	Grape	Leaves, fruit, fruit kernels, fruit juice and vinegar	Hot & Wet	Tonic for the heart, liver and nerves.
<i>Crocus sativus</i> L.	Saffron	Stigma	Hot & Dry	- Exhilarant - Tonic for the heart, brain and nerves
<i>Nardostachys Jatamansi</i> DC.	Common valerian	Roots and root water (hydrosol)	Hot & Dry	Tonic for the brain and liver.
<i>Pistacia vera</i> L.	Pistachio	Leaf, fruit	Hot & Wet	Tonic for the mind and heart
<i>Rosa damascene</i> Mill	Damask rose	Flowers, flower essential oil, flower water (hydrosol)	Moderate	- Tonic for the heart, and brain - Useful for insomnia
<i>Punica granatum</i> L.	Pomegranate	Root bark, tree trunk bark, flowers and fruits	Cold & Wet	Tonic for the heart, nerves, liver, spleen and stomach
<i>Ocimum basilicum</i> L.	Basil	Leaves	Hot & Dry	Tonic for all body organs
<i>Amygdalus communis</i> L. var. <i>dulcis</i>	Sweet almond	Roots, kernels, kernel oils	Hot & Wet close to moderate	Tonic for the principal organs, nerves, and memory.

**Table-2:** Recommendations for the management of ADHD according to TPM (6, 7, 9)

1- Healthy and balanced meal plan	
Meal	Recommendations
Breakfast	Consumption of: - Egg yolk (e.g., goose and partridge egg yolk) - Jams (e.g., apple, quince, balang (citron) and carrot jams) with a little butter - Desserts such as almond porridge, almond milk, rice pudding, Persian saffron rice pudding
Snack	- Red currants and, sweet almond, pistachio, coconut with a little sugar. - Sweet apple beverage containing apple fragment, rose water, a little saffron and sugar. - Pastes: apple paste, quince paste and sweet pomegranate paste. - Fruits: apples, pears, sweet grapes, sweet pomegranates, sweet white berries, and blackberries.
Lunch/dinner	- Nutritive broth of chicken, goat meat with pumpkin and spinach and lettuce leaves. - Chicken soup, lamb soup, goat soup and partridge soup, plum soup. - Meatless meal ( <i>Mozavver</i> ) of mung beans with almond, spinach stew or purslane leaves with squash stew. - Porridge comprised of starch and almond or sesame oil, almond porridge, almond milk. - Halva (kind of sweetmeat), apple sweetmeat. - Meat: partridge, pheasant, goat, duck, chicken and cock, sheep, lamb. - Vegetables: squash, cucumber and lettuce, basil, olive, carrot, mint, purslane.
Beverages	- Drinks such as ' <i>Jollab</i> ' (rose water with saffron and sugar). - Use of suitable aroma water of <i>Rosa canina</i> L. (rose hip), aroma water of willow ( <i>Salix alba</i> L.) and bitter orange flower or rose water. - Juices such as sweet pomegranate, apple, coconut, orange juice. - Whey protein ( <i>Ma'oljobon</i> ). - Barley-water ( <i>Ma'olshaeer</i> ).
2- General recommendations for lifestyle changes	
<p>2-1- The things should avoid* in their life, including:</p> <ul style="list-style-type: none"> <li>- Prolonged exposure to sunny weather, long sleeplessness, and exposure to wind and dust.</li> <li>- Excessive consumption of spices (hot, sour, salty, spicy foods contain pepper).</li> <li>- Consumption of foods such as lentils, beans, garlic and raw onions, mushrooms, eggplant, cabbage, meats such as beef, calf, camel, and ostrich.</li> <li>- Consumption of food colors and inorganic products, food flavors, colors and artificial preservatives.</li> </ul> <p>2-2- Recommendations for getting better sleep</p> <ul style="list-style-type: none"> <li>- Stick to a sleep schedule.</li> <li>- Avoid boring exercise / physical activities and overeating, especially before bedtime or starving before bedtime (Don't go to bed hungry or stuffed).</li> <li>- Appropriate light and temperature and no sound in the bedroom.</li> <li>- Use appropriate herbal remedies when needed.</li> </ul>	

\* Avoid doing certain things for a specific period, which varies from person to person.

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