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# Medicinal Plants Used in Iranian Traditional Medicine for Enhancing Children's Heart Health: A Brief Review

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## ABSTRACT

Children's cardiovascular health is significantly shaped by proper nutrition and a balanced lifestyle. Diets abundant in fruits, vegetables, whole grains, and healthy fats, combined with the avoidance of processed foods and refined sugars, are vital in maintaining vascular integrity and optimal cardiac function. In this context, certain medicinal plants—due to their potent antioxidant and anti-inflammatory properties—may offer additional cardioprotective benefits. This review aims to explore medicinal plants documented in Iranian traditional medicine that have been associated with promoting heart health in children. This brief review draws upon a comprehensive search of major scientific databases, including PubMed, Scopus, Web of Science, Google Scholar, and SID, alongside an analysis of classical Iranian and Islamic medical texts related to pediatric cardiology. Relevant literature published between 2000 and 2024 was identified using targeted keywords and evaluated for inclusion. Findings suggest that Iranian traditional medicine emphasizes the use of natural substances to support cardiovascular health in children. A variety of fruits—such as apples, grapes, pears, kiwis, watermelon, pomegranates, dates, barberries—and vegetables like carrots and lentils, are highlighted for their antioxidant properties and heart-supportive compounds. Additionally, whole grains (e.g., oats) and nuts (e.g., almonds, walnuts, pistachios) are recognized for their beneficial fatty acids. Medicinal plants such as borage, lemongrass, olive, and pumpkin are also traditionally recommended for their anti-inflammatory effects, vascular-strengthening properties, and nutritional value. Medicinal plants rooted in Iranian traditional practices may offer meaningful contributions to the prevention of heart disease in children. Their rich composition of antioxidant and anti-inflammatory agents underpins their potential to support heart function and mitigate early cardiovascular risk factors.

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## Introduction

Cardiovascular health in adulthood is established from childhood. The etiology of most heart disease remains largely undetermined, likely involving a complex interplay between genetic susceptibility and environmental factors (Zolfi et al., 2024). Research indicates that the development and progression of certain cardiovascular diseases begin in childhood and adolescence (Gidding et al., 1995). This process is influenced by both genetic and environmental factors (Steinberger et al., 2016). Risk factors for heart disease in children include high blood pressure, high cholesterol, obesity, diabetes, smoking, and physical inactivity (Jackson et al., 2015). Promoting healthy habits, such as consuming a balanced diet, avoiding tobacco, managing stress, and increasing physical activity, is crucial for preventing heart disease (Jackson et al., 2015). Regular screenings to detect early risk factors are essential, and these measures should be continuously applied to children and adolescents (Harrell et al., 1998).

Monitoring heart health in children, even in the absence of congenital heart disease, is vital. Routine check-ups and regular consultations with specialists can ensure heart health in the future. The primary goal is to reduce risk factors from an early age, ensuring a healthy life free from cardiovascular diseases (Wei et al., 2015). These factors can be controlled through lifestyle choices, including a proper diet and regular physical activity (Moller et al., 1994). Preventive measures at this stage can delay the onset of heart disease. Managing these factors from childhood can contribute to the prevention of heart disease later in life (Claydon et al., 2015).

Traditional medicine and herbal remedies have gained interest as complementary and alternative approaches in alleviating symptoms and improve children's health (Zolfi and Radvar, 2024). Herbal remedies, formulated in modern pharmaceutical forms, can serve as a viable alternative to synthetic drugs, offering improved acceptance and ease of use for children (Zolfi and Pirhadi, 2025). In traditional medicine, dietary regimens for maintaining children's heart health emphasize the use of fruits and vegetables rich in antioxidants, healthy fats like olive and sesame oil, and herbs such as ginger and cinnamon. These diets help strengthen the heart and prevent cardiovascular issues (Shaheen et al., 2017; Jiménez-Balam et al., 2019). The use of medicinal plants to enhance children's general health has received attention in many cultures as a natural and effective method (Shaheen et al., 2017). Medicinal plants, due to

their calming, anti-inflammatory, and immune-boosting properties, can significantly contribute to children's health (Jiménez-Balam et al., 2019). Some plants are rich in antioxidants, which play a role in preventing diseases and strengthening the cardiovascular system (Geissler et al., 2002). Proper and supervised use of these plants can help improve general health and effectively prevent many diseases (Sofowora et al., 2013). Medicinal plants play a vital role in maintaining and improving children's heart health. Some plants, due to their anti-inflammatory and vasodilatory effects, can enhance heart function and improve blood circulation (Sofowora et al., 2013). Additionally, some medicinal plants, due to their strong antioxidants, help prevent oxidative damage and protect children's cardiovascular health (Sofowora et al., 2013). Correct use of these plants as part of a healthy diet can be effective in preventing cardiovascular diseases in childhood. The aim of this review study is solely to provide a report on the medicinal plants used in traditional Iranian medicine and their impact on children's heart health

## Methodology

This review study was conducted using reliable scientific resources, traditional medicine texts, and published articles from reputable databases such as PubMed, Scopus, Web of Science, Google Scholar, and SID. The search was carried out using relevant keywords, including "Traditional Medicine," "Pediatric Cardiology," "Herbal Medicine," "Cardiovascular Health in Children," and their Persian equivalents. Studies published between 2000 and 2024 were reviewed. Additionally, authoritative Iranian and Islamic traditional medicine texts related to children's heart health were analyzed in this study.

## Results

The findings indicate that traditional medicine, utilizing fruits, vegetables, and medicinal plants, can play an effective role in maintaining heart health in children. The consumption of substances such as apples, grapes, pomegranates, kiwis, dates, oats, almonds, walnuts, pistachios, borage, and lemon verbena, due to their antioxidant, anti-inflammatory, and vascular-strengthening properties, plays a significant role in the prevention of cardiovascular diseases in children. Medicinal plants, fruits, and vegetables beneficial for heart health are listed in Table 1.

**Table 1:** Medicinal plants and their cardiovascular benefits in Iranian traditional medicine

| Common name   | Farsi name  | Scientific name            | Plant family  | Used Part      | Ecological classification | Mechanisms                                                                       | References                |
|---------------|-------------|----------------------------|---------------|----------------|---------------------------|----------------------------------------------------------------------------------|---------------------------|
| Apple         | Sib         | <i>Malus domestica</i>     | Rosaceae      | Fruit          | Perennial                 | Antioxidant, blood lipid regulation, inflammation reduction                      | Patocka et al., 2020      |
| Grape         | Angour      | <i>Vitis vinifera</i>      | Vitaceae      | Fruit          | Perennial                 | Vascular strengthening, cardiovascular health improvement                        | Alsallameh et al., 2022   |
| Pear          | Golabi      | <i>Pyrus communis</i>      | Rosaceae      | Fruit          | Perennial                 | Cholesterol reduction, improved vascular function                                | Ibrahim et al., 2020      |
| Oat           | Joedosar    | <i>Avena sativa</i>        | Poaceae       | Seed           | Annual                    | Cholesterol reduction, blood pressure improvement                                | Singh et al., 2013        |
| Kiwi          | Kiwi        | <i>Actinidia deliciosa</i> | Actinidiaceae | Fruit          | Perennial                 | Antioxidant, cardiovascular system strengthening                                 | Hussain et al., 2021      |
| Watermelon    | Hendavaneh  | <i>Citrullus lanatus</i>   | Cucurbitaceae | Fruit          | Annual                    | Blood circulation improvement, blood pressure reduction                          | Ozcan et al., 2023        |
| Pistachio     | Pesteh      | <i>Pistacia vera</i>       | Anacardiaceae | Seed           | Perennial                 | LDL reduction, HDL increase, inflammation reduction                              | Kashaninejad et al., 2011 |
| Pumpkin       | Kadohalvaei | <i>Cucurbita pepo</i>      | Cucurbitaceae | Fruit, Seed    | Annual                    | Heart strengthening, anti-inflammatory, blood pressure reduction                 | Rolnik et al., 2022       |
| Olive         | Zeytoun     | <i>Olea europaea</i>       | Oleaceae      | Fruit, Leaf    | Perennial                 | Antioxidant, inflammation and blood pressure reduction                           | Suroowan et al., 2021     |
| Lentil        | Adas        | <i>Lens culinaris</i>      | Fabaceae      | Seed           | Annual                    | Blood sugar regulation, cholesterol reduction                                    | Lim et al., 2012          |
| Date          | Khorma      | <i>Phoenix dactylifera</i> | Arecaceae     | Fruit          | Perennial                 | Antioxidant, oxidative stress reduction                                          | Coşkun et al., 2022       |
| Barberry      | Zereshk     | <i>Berberis vulgaris</i>   | Berberidaceae | Fruit, Root    | Perennial                 | Anti-inflammatory, blood lipid reduction                                         | Brahmi et al., 2024       |
| Borage        | Gavzaban    | <i>Echium amoenum</i>      | Boraginaceae  | Flower, Leaf   | Annual                    | Sedative, blood pressure reduction, heart strengthening                          | Noras et al., 2022        |
| Lemon verbena | Behlimou    | <i>Aloysia citrodora</i>   | Verbenaceae   | Leaf           | Perennial                 | Sedative, vascular strengthening                                                 | Shafiee et al., 2016      |
| Pomegranate   | Anar        | <i>Punica granatum</i>     | Lythraceae    | Fruit, Peel    | Perennial                 | Antioxidant, inflammation reduction, heart strengthening                         | Al-Muammar et al., 2012   |
| Wild Almond   | Badam       | <i>Prunus amygdalus</i>    | Rosaceae      | Seed<br>Kernel | Perennial                 | Anti-inflammatory, blood pressure reduction, blood sugar regulation, antioxidant | Sahib, 2014               |
| Walnut        | Gerdou      | <i>Juglans regia</i>       | Juglandaceae  | Seed<br>Kernel | Perennial                 | Rich in beneficial fatty acids, anti-inflammatory                                | Thakur and Singh, 2013    |

The plant families Rosaceae (which includes plants such as apples, grapes, and pears) and Cucurbitaceae (which includes watermelon and pumpkin) are prominently featured in most of the studied plants and are known for their heart-strengthening and anti-inflammatory properties. The families Vitaceae and Anacardiaceae also provide plants that are particularly effective in reducing blood lipids and improving circulation.

Among the various plant parts investigated, fruits were the most commonly used. These fruits typically possess antioxidant and anti-inflammatory properties and have a significant impact on improving cardiovascular function. Seeds and leaves were also utilized in different contexts and have notable properties in reducing blood pressure, regulating blood sugar, and strengthening the cardiovascular system. Flowers and roots also play their role in reducing inflammation and strengthening the heart.

Among the most important mechanisms cited for most of the medicinal plants are antioxidant properties, inflammation reduction, blood lipid lowering, and blood sugar regulation. These attributes play a crucial role in the prevention and treatment of heart diseases. In particular, the antioxidant properties of these plants help prevent oxidative damage to heart and vascular cells. Strengthening the vessels and improving cardiovascular health are other notable mechanisms observed in certain medicinal plants. The reduction of cholesterol and improvement of vessel function are other important features found in plants like pears and apples.

## Discussion

In traditional medicine, apples are recognized as antioxidants that aid in regulating blood lipids and reducing inflammation. Their active compounds include flavonoids and pectin (Patocka et al., 2020). Grapes are used for vascular strengthening and maintaining cardiovascular health. Resveratrol and anthocyanins are key compounds found in this fruit (Alsallameh et al., 2022). Pears are traditionally used to reduce cholesterol and improve vascular function, with flavonoids and polyphenols playing a significant role in these effects (Ibrahim et al., 2020). Barley helps in reducing cholesterol and improving blood pressure. Beta-glucan and antioxidants are the active constituents in this plant (Singh et al., 2013). Kiwi is known for enhancing cardiovascular health and reducing oxidative

stress. Vitamin C and flavonoids are its active compounds (Hussain et al., 2021). Watermelon aids in improving circulation and reducing blood pressure, with citrulline and lycopene contributing to these effects (Ozcan et al., 2023). Pistachios help reduce LDL, increase HDL, and decrease inflammation, with fatty acids and antioxidants being the active compounds (Kashaninejad et al., 2011). Pumpkin has heart-strengthening and anti-inflammatory effects, with omega-3 fatty acids and vitamins contributing to these benefits (Rolnik et al., 2022). Olive oil is a potent antioxidant that reduces inflammation and blood pressure. Oleuropein and polyphenols are the most active compounds in it (Suroowan et al., 2021). Lentils assist in regulating blood sugar and reducing cholesterol, with proteins and polyphenols contributing to these effects (Lim et al., 2012). Dates are known for their antioxidant properties, reducing oxidative stress, and containing vitamins and polyphenols (Coşkun et al., 2022). Barberry exhibits anti-inflammatory properties and reduces blood lipids. Alkaloids and phenolic compounds are responsible for these effects (Brahmi et al., 2024). Borage is a sedative and reduces blood pressure, with fatty acids and antioxidants playing a role in these effects (Noras et al., 2022). Lemon balm is calming and strengthens the vascular system, with essential oils and flavonoids being the active compounds (Shafiee et al., 2016). Pomegranate is an antioxidant that reduces inflammation and strengthens the heart, with tannins and anthocyanins as key components (Al-Muammar et al., 2012). Sweet almonds are anti-inflammatory and reduce blood pressure, with unsaturated fatty acids and proteins contributing to these effects (Sahib, 2014). Walnuts are a rich source of omega-3 fatty acids and possess anti-inflammatory properties, strengthening the cardiovascular system through these compounds (Thakur and Singh, 2013). Bioactive compounds found in medicinal plants contribute to heart health by reducing inflammation, improving blood circulation, and lowering LDL cholesterol levels. These compounds can enhance heart function and reduce the risk of cardiovascular diseases (Thakur and Singh, 2013).

## Conclusion

Based on these findings, it can be concluded that medicinal plants, through various mechanisms such as antioxidant activity, inflammation reduction, blood lipid regulation, and

cardiovascular strengthening, are valuable tools in traditional Iranian medicine for improving the cardiovascular health of children. The use of fruits, seeds, and leaves as primary plant-based resources in the treatment and prevention of cardiovascular diseases, especially in children, is of great importance

## Declarations

### Conflict of interest

The authors have no competing interests to declare that are relevant to the content of this article.

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## Consent to participate

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## Author contributions

AZ: Conceptualization, the original draft writing, investigation, writing including reviewing and editing and investigation and formal analysis; AZ: Supervision, and project administration; AZ: Conceptualization, the original draft writing, writing including reviewing and editing.

## Ethical considerations

This study was performed in line with the principles of the Declaration of Helsinki.

## References

- Al-Muammar MN, Khan F. Obesity: the preventive role of the pomegranate (*Punica granatum*). Nutrition. 2012;28(6):595-604. doi:10.1016/j.nut.2011.11.013.
- Alsallameh S, Auda NA. *Vitis vinifera* supplementation and its effect on some hematological levels. Biochemical and Cellular Archives. 2022;22(1):1809-13.
- Brahmi F, Mokhtari O, Legssyer B, Touzani R, Fakchich J, Khojimatov OK, et al. *Berberis vulgaris*

L. *Berberis vulgaris* subsp. australis (Boiss.) Heywood – Berberidaceae. In: Ethnobotany of Northern Africa and Levant. Cham: Springer Nature Switzerland; 2024. p.507-19.

Claydon J, Popescu CR, Shaiba L, Christopherson C, Human D, Taylor R, et al. Outcomes related to respiratory syncytial virus with an abbreviated palivizumab regimen in children with congenital heart disease: a descriptive analysis. CMAJ Open. 2019;7(1): E88-E93. doi:10.9778/cmajo.20180167.

Coşkun R, Çelik AI, Coşgun MS, Dündar C, Türkoğlu M, Süleyman H. Phoenix dactylifera L. tree fruit exerts cardioprotective effect against doxorubicin-induced heart damage in rats via inhibition of oxidative stress. Koşuyolu Heart Journal. 2022;25(2):193-9.

Geissler PW, Harris SA, Prince RJ, Olsen A, Achieng'Odhiambo R, Oketch-Rabah H, et al. Medicinal plants used by Luo mothers and children in Bondo district, Kenya. Journal of Ethnopharmacology. 2002;83(1-2):39-54. doi:10.1016/s0378-8741(02)00191-5.

Gidding SS, Deckelbaum RJ, Strong W, Moller JH. Improving children's heart health: a report from the American Heart Association's Children's Heart Health Conference. Journal of School Health. 1995;65(4):129-33.

Harrell JS, Gansky SA, McMurray RG, Bangdiwala SI, Frauman AC, Bradley CB. School-based interventions improve heart health in children with multiple cardiovascular disease risk factors. Pediatrics. 1998;102(2):371-80.

Hussain SZ, Naseer B, Qadri T, Fatima T, Bhat TA. Kiwifruit (*Actinidia deliciosa*)—morphology, taxonomy, composition and health benefits. In: Fruits Grown in Highland Regions of the Himalayas: Nutritional and Health Benefits. Cham: Springer; 2021. p.145-56.

Ibrahim RM, Hammoudi ZM. Phytochemistry and pharmacological activity of pear (*Pyrus communis* Linn): a review. Plant Archive. 2020;20(2):7820-8.

Jackson AC, Frydenberg E, Liang RPT, Higgins RO, Murphy BM. Familial impact and coping with child heart disease: a systematic review. Pediatric Cardiology. 2015;36:695-712. doi:10.1007/s00246-015-1121-9.

Jiménez-Balam D, Alcalá L, Salgado D. Maya children's medicinal plant knowledge: initiative and agency in their learning process. Learning, Culture and Social Interaction. 2019;22:100333. doi:10.1016/j.lcsi.2019.100333.

- Kashaninejad M, Tabil LG. Pistachio (*Pistacia vera* L.). In: Postharvest Biology and Technology of Tropical and Subtropical Fruits. Cambridge: Woodhead Publishing; 2011. p.218-247e.
- Lim TK. Lens culinaris. In: Edible Medicinal and Non-Medicinal Plants: Volume 2, Fruits. Dordrecht: Springer; 2012; 742-53.
- Moller JH, Taubert KA, Allen HD, Clark EB, Lauer RM. Cardiovascular health and disease in children: current status. A Special Writing Group from the Task Force on Children and Youth, American Heart Association. Circulation. 1994;89(2):923-30.
- Noras MR, Soltanifar A, Salari R, Jarahi L, Abrishami MH. Comparing the effects of a herbal drug based on Echium amoenum with fluvoxamine in the treatment of adolescents with obsessive-compulsive disorder. Current Drug Discovery Technologies. 2022;19(5):42-48. doi:10.2174/1570163819666220624093416.
- Ozcan B, Moinard C, Belaïdi E. Watermelon (Citrullus lanatus) and cardiovascular protection: a focus on the effects of citrulline. In: Ancient and Traditional Foods, Plants, Herbs and Spices Used in Cardiovascular Health and Disease. Boca Raton: CRC Press; 2023. p.345-57.
- Patocka J, Bhardwaj K, Klimova B, Nepovimova E, Wu Q, Landi M, et al. Malus domestica: a review on nutritional features, chemical composition, traditional and medicinal value. Plants. 2020;9(11):1408. doi:10.3390/plants9111408.
- Rolnik A, Olas B. A review of the effect of preparations from vegetables of the Asteraceae family and Cucurbitaceae family on the cardiovascular system and its diseases. Nutrients. 2022;14(17):3601. doi:10.3390/nu14173601.
- Sahib ZH. Assessment of anxiolytic activity of nuts of *Prunus amygdalus* Dulcis (almond) in mice. Medical Journal of Babylon. 2014;11(4):817-824.
- Shafiee F, Moghadamnia AA, Shahandeh Z, Sadighian F, Khodadadi E. Evaluation of the antibacterial effects of aqueous and ethanolic leaf extracts of *Aloysia citriodora* (Lemon verbena) on Streptococcus mutans and Streptococcus sobrinus. Electron Physician. 2016;8(12):3363. doi:10.19082/3363.
- Shaheen S, Abbas S, Hussain J, Mabood F, Umair M, Ali M, et al. Knowledge of medicinal plants for children diseases in the environs of district Bannu, Khyber Pakhtoonkhwa (KPK). Frontiers in Pharmacology. 2017;8:430. doi:10.3389/fphar.2017.00430.
- Singh R, De S, Belkheir A. *Avena sativa* (Oat), a potential nutraceutical and therapeutic agent: an overview. Critical Reviews in Food Science and Nutrition. 2013;53(2):126-44. doi:10.1080/10408398.2010.526725.
- Sofowora A, Ogunbodede E, Onayade A. The role and place of medicinal plants in the strategies for disease prevention. African Journal of Traditional, Complementary and Alternative Medicines. 2013;10(5):210-229. doi:10.4314/ajtcam.v10i5.2.
- Steinberger J, Daniels SR, Hagberg N, Isasi CR, Kelly AS, Lloyd-Jones D, et al. Cardiovascular health promotion in children: challenges and opportunities for 2020 and beyond: a scientific statement from the American Heart Association. Circulation. 2016;134(12):e236-e255.
- Suroowan S, Jugreet BS, Sadeer NB, Mahomoodally MF. Olive and olive oil: a one stop herbal solution for the prophylaxis and management of cardiovascular disorders. In: Olives and Olive Oil in Health and Disease Prevention. Academic Press; 2021. p.275-90. doi:10.1016/B978-0-12-819528-4.00014-6.
- Thakur M, Singh K. Walnut (*Juglans regia* L.) a complete health and brain food. Asian Journal of Biological Sciences. 2013;8(2):276-288.
- Wei H, Roscigno CI, Hanson CC, Swanson KM. Families of children with congenital heart disease: a literature review. Heart Lung. 2015;44(6):494-511. doi:10.1016/j.hrtlng.2015.08.005.
- Zolfi GA, Pirhadi M. Phytotherapy in treating children's colds. Plant Biotechnology Persa. 2025;7(1):99-103.
- Zolfi GA, Radvar M. Exploring herbal antioxidants in reducing fever in children: insights from traditional Iranian medicine and their antipyretic mechanisms. Journal of Chemical Health Risks. 2024;14(0). doi: 10.60829/jchr.2024.1182998.
- Zolfi GA, Rasouli J, Agdam SA, Radvar M. Prevalence of echocardiographic profile and its related risk factors in congenital heart disease patients: a cross-sectional study. Galen Medical Journal. 2024;13:e3517. doi: 10.31661/gmj.v13i.3517.

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