Open Access Review Article

ISSN: 2349-9818
July - August 2024, Vol. 11 (4), 01-08

Tropical Journal of Pharmaceutical and Life Sciences
(An International Peer Reviewed Journal)
Journal homepage: http://informativejournals.com/journal/index.php/tjpls

Integrative approaches to anaemia treatment: the potential of Indian herbal remedies

Prof. Dr. Shashank Tiwari[1]* and Shreya Talreja[2]

[1] Director (Academic & Research), Lucknow Model College of Pharmacy, Lucknow, UP
[2] Assistant Professor, Hygia College of Pharmacy, Lucknow. UP

ARTICLE INFO:
Received: 26th July. 2024**; Received** in revised form: 18th August 2024**; Accepted:** 26th August 2024**; Available online:** 27th August 2024.

Abstract

Anaemia, which affects more than 2 billion people worldwide is defined as a situation in which the quantity of red blood cells (RBCs) or haemoglobin are so low that oxygen delivery to tissues cannot satisfactorily meet all the cellular metabolic demand. It has serious health implications such as hazards to the brain, loss of physical productivity and death in general especially children, pregnant women. Traditional approaches to treatment consist mostly of oral iron replacement and dietary modifications, with increasing interest in use Indian traditional herbal medicine as adjunctive treatments. I feel this is a really deep exploration of how different types impact health (iron-deficiency, vit B12 deficiency and anaemia of chronic disease to name just three). Ayurvedic Herbs and Anaemia -It discusses a detailed application of Ayurveda to anaemic condition with case-studies, it also covers the therapeutic potential as Ashwagandha. Shatavari, Punarnava seeds and leaves (CMN), Moringa (Leaves) in management of anaemia. Loaded with nutrients like iron and Vitamin C these herbs uplift haemoglobin levels, facilitate the absorption of nutrients besides promoting overall health.

Keywords: Anaemia, Indian traditional herbal medicine, Ayurveda, Iron-deficiency anaemia, Haemoglobin, Ashwagandha, Shatavari, Punarnava, Moringa, Red Blood Cells, Iron supplementation, Ayurvedic treatment, Haemolytic anaemia, Vitamin B12 deficiency.

Introduction

Anaemia is an established health condition across the world insufficient number of red blood cells (RBCs) or haemoglobin level, which leads to decrease in amount oxygen supplied into organs and tissues. Anaemia, according to the World Health Organization (WHO) affects almost 2 billion individuals worldwide and has a high prevalence in developing countries like India. Different things can cause anaemia, e.g.: poor nutritionpre-existing health conditionsgenetic disordersblood lossdue to an accident The most common type is iron-deficiency anaemia (IDA), which could be due to low dietary intake, poor absorption and losses of excessive amount of iron. There are other types of Anaemias such as Vitamin B12 and Folate deficiency anaemia,

***Corresponding Author:**
Prof.(Dr.) Shashank Tiwari
Lucknow Model College of Pharmacy,
Lucknow, UP
DOI: https://doi.org/10.61280/tjpls.v11i4.163

Haemolytic anaemia (where red blood cells are destroyed faster than they can be made); or because the body destroys them); or it is an acquired condition like in certain autoimmune diseases.) and Anaemia due to some chronic conditions for example kidney disease. The consequences of Anaemia are far raging, more so for vulnerable populations like pregnant women, children and the elderly. Anemia causes tiredness, a reduced cognitive function (the capacity to think), impaired immunity and physical performance. It has even been tied to maternal and infant morbidity, slows child growth as well heart failure.

Standard treatments for anaemia usually involve iron supplementation with dietary measures and treatment of any underlying cause. But, ancient Indian medicinal techniques have herbal solutions and that includes the most popular one Ayurveda. These Ayurvedic herbs have been traditionally used across centuries to treat iron deficiency anemia by increasing hemoglobin, enhancing nutrient absorption and supporting overall vitality.

This review provides an overview of the types and symptoms of anaemia, highlights a perspective view on possible health problems due to lack or inadequate levels in essential nutrients especially iron; meanwhile emphasizing concepts regarding traditional Indian herbal drugs that have outlined beneficial effects for managing as well treating this condition. We will also look to use ayurvedic herbs such as Ashwagandha, Shatavari, punarnava Amalaki aid Moringa that have similar potential in improving haemoglobin levels and treating the root causes of anaemia. Increasingly-popular interest in evidence-based natural therapies which are part of a holistic approach to anaemia management make it vital to gain further empirological insight into the effectiveness of these herbs.

Types of Anaemia and Their Health Impacts

In particular, anaemia is considered a collapse with many different inputs and unique effects. To fully appreciate its health implications, one must first understand the diverse nature of anaemia. The main types of anemia and its implications to health are as follows:

Iron-Deficiency Anaemia (IDA)

The most widely recognized type around the world is iron-lack pallor, where a lack of iron inside the body results in an inadequate measure of iron to function properly. The iron is a part of haemoglobin which in turn carries oxygen to all parts of the body by red blood cells.

Causes: Insufficient intake of iron in the diet, malabsorption (ex. celiac disease), chronic blood loss (e.g., heavy menstruation or GI bleeding) OR increased demand (pregnant).

Symptoms: Tiredness, weakness, pale looking skin and brittle nails.

Health Impacts: IDA limits neurocognitive development and has adverse effects on physical function, exercise performance, and immune response in children. In adults, it can result in reduced ability to work, chronic fatigue syndrome and poor quality of life. IDA increases the risk of preterm birth, low-birth weight and maternal mortality.

Vitamin B12 Deficiency Anaemia Camera Icon

Occurring in anaemia due to deficiency of vitamin B12, this is important for production rbc and their normal functioning as well nerve cells.

If serum vitamin B12 low : < 156 pmol/L Special requests Additional / relevant clinical information –

Causes: Poor dietary intake (particularly in vegetarians), pernicious anaemia (an autoimmune condition that destroys the intrinsic factor, a protein necessary for absorption of vitamin B12) or malabsorption disorders(e.g. Crohn's disease).

Symptoms: Fatigue, weakness, shortness and breath from anemia; pallor or jaundice of skin due to hemolysis/ineffective erythropoiesis (destruction of red blood cells); neurological symptoms, which may range in severity from numbness to subacute combined degeneration.

Health Impacts: If untreated, a vitamin B12 deficiency can lead to irreversible neurological damage and symptoms that include difficult walking, memory problems and mood disturbances. It is also related to an extremely high incidence of heart disease and majorly contributing in depression as well.

Folate Deficiency Anaemia

Folate (Vitamin B9) is a key factor in human DNA synthesis and cell division. If you do not have enough folate, large RBCs could be made that don't work properly.

Etiology: Poor dietary intake (folate-rich foods which include leafy greens, legumes, and citrus), malabsorption due to celiac disease increased demand as in pregnancy or excessive alcohol consumption.

Symptoms: fatigue, can develop breathless when walking or exercising. Maternal folate deficiency leads to neural tube defects in the fetus, during pregnancy.

Health Impacts: This is particularly risky in pregnant women as it can cause problems such as premature labour and birth defects, which folate helps prevent. Adults develop chronic fatigue, mental dysfunction and immunosuppression.

Haemolytic Anaemia

Intrinsic causes of haemolytic anaemia happen when RBCs are destroyed prematurely (such as due to genetic defects in their structure), while extrinsic causes occur from outside the cell.

Sickle cell anaemia or thalassemia, as well as systemic diseases like lupus Systemic Lupus Erythematosuss Genetic disorders concerning red blood cells (e.g., sickle/take your pick) Causes of live infections, drug effects.

Symptoms: Fatigue, Dyspnea (difficulty in breathing), Pale or Prailey looking skin, Dark urine and an enlarged spleen.

Health Impacts: Impaired erythrocyte lifespan leads to jaundice, cholemia (cholelithiasis) and predispose the body for infections. Heart failure, organ damage and chronic pain (especially in sickle cell anaemia) are potential adverse side-effects of haemolytic aneamia.

Aplastic Anaemia

Aplastic anaemia is an uncommon however severe condition due to inadequate production of RBCs, WBCS and platelets by bone marrow. If left untreated, you can die.

Causes: Exposure to toxic chemicals, radiation and viral infections are factors that may contribute in addition to certain medications. It can also be idiopathic (unknown cause) or autoimmune in origin.

Symptoms: fatigue, frequent infections, easy bruising or bleeding and shortness of breath with exercise; pale skin.

Health Impacts: People may catch infections more easily because aplastic anaemia lowers the immune system and they have less natural resistance to germs. The low platelet levels further raise the risk of significant clotting. In the absence of sufficient RBCs, organ failure develops leading to heart issues and eventually death if not treated.

Anaemia of Chronic Disease (ACD)

The major physiopathology features of anaemic conditions in CKD include;This is the type of anemia common among patients with chronic diseases like kidney disease, cancer, HIV/AIDS and some autoimmune disorders. Stored iron availability is not utilized by the body to an effective extent resulting in ineffective RBC production.

Causes: Inflammation or chronic disease that inhibit iron metabolism and RBC synthesis

Symptoms: Fatigue, weakness, pale skin and shortness of breath This means that you can get similar symptoms to what the original disease had.

Health Impacts: Anaemia of chronic disease can worsen the symptoms related to an underlying condition with decreased quality of life, intermittent immune function and prolonged duration for regaining health. In worse cases, it can lead to heart and other illnesses.

Health Impacts of Anaemia

All forms of anemia ill-health significantly. It imparts health impacts which can be summarized:

1. Fatigue and lower physical capacity: the deficiency of oxygen in tissue leads to chronic whole-body fatigue, muscle weakness, shortness of breath. Physical performance is reduced, which affects daily activities and hampers work productivity.

2. Anemia often leads to cognitive deficits and impaired learning capacity among children. In adults, lack of focus and memory issues can surface through impaired concentration or decision-making.
3. Anaemia can be particularly harmful for pregnant women, posing increased risks of pregnancy complications from preterm birth and low weight babies to maternal mortality. However, severe anaemia also causes fetal growth restriction and problems in development.
4. Reducing Immunity : Because of anemia the body immune system becomes weak and this makes a person more prone to infections. It is especially a concern for children, elderly people and those with chronic diseases.
5. Heart disease: Severe anaemia can force the heart to work harder (because less oxygen is carried in each unit of blood) resulting failure. It is especially dangerous for people who have existing cardiovascular illnesses.
6. Slow recovery from illness: Anemia can also delay the body's ability to heal and recover from an injury or disease as tissues need oxygen for repair. It leads to reduced tissue healing time due to less blood supply and newborn anaemic makes wound epithelialization become abnormal.

In short, anaemia is responsible for a wide range of disabling health effects, influencing almost all aspects of physical as well cognitive health. For that reason, effective treatment is crucial for minimizing those risks and increasing the quality of life. Traditional herbal medicine with Indian origin offers another aspect in the prevention and management of anaemia by treating its symptoms as well as underlying causes.

Indian Traditional Herbal Medicines in the Treatment of Anaemia

Holistic Approach for Anaemia in Ayurvedic Modality Ayurveda, the oldest system of Indian traditional medicine offers most beneficial holistic treatment for treating anaemia. Conventional treatments are limited by focusing mainly on iron supplementation, while Ayurvedic remedies address both the root causes and symptoms of anemia using natural herbs to raise hemoglobin levels with all round nutrition absorption improvement which enhance overall energy. The major aim of this review article is to focus on important Ayurvedic herbs and their potential role in anaemia management such as IDA, vitamin deficiency anemias; due to the reason associated with a commute chronic disease.

Ashwaganda *(Withania somnifera)*

One of the most venerated herbs from Ayurveda, Ashwagandha is recognized for its adaptogenic and revitalizing nature. Exploited for sure in the conventional cure of nonentity not withstanding weariness or fatigue and general sluggishness that goes side by plane along with anaemia.

Therapeutic Effects: Ashwagandha boosts energy, strengthens the immune system and enhances physical stamina making it easier for anaemic individuals to overcome chronic fatigue associated with their condition. Antioxidants, on the other hand, contribute to better health.

Mechanism: It promotes the production of RBC in bone marrow thus balancing haemoglobin levels. It reduces inflammation and oxidative stress, which are typically observed in anaemia especially associated with chronic disease.

Shatavari (*Asparagus racemosus*)

Shatavari is an Ayurveda herb which is very good specially for women. It is also said to have results of haemoglobin level increase and for its positive effects in reproductive health.

Therapeutic Uses of Shatavari -Shatavari is a common herb that treats anaemia in women primarily during pregnancy and postpartum. It helps to balance hormones and their metabolism, promotes the production of hemoglobin resulting in a better vitality. Iron and essential nutrients in Shatavari help to increase RBC production. It is also believed to support healthy iron metabolism, and therefore it can be helpful in the treatment of iron-deficiency anaemia due to its ability facilitate natural absorption from dietary sources.

Punarnava (*Boerhaavia diffusa*)

Punarnava is a Sanskrit word meaning “that which renews the body” and it has been used in traditional Indian medicine for thousands of years to treat many different ailments, such as anaemia.

Therapeutic Effects: Punarnava has natural diuretic and detoxifying properties which is beneficial in treating water retention & bloating that are common symptoms of anaemic patients. It also helps in increasing haemoglobin and increase body resistance against fatigue.

Mechanism: Punarnava increases RBC count and maintains iron metabolism. It also assists the liver and kidneys in performing to their best, which enables our bodies to digest what is required for good blood production well.

Amalaki *(Emblica officinalis)*

Indian gooseberry, or Amalaki is one of the highest natural vitamin C sources essential for iron absorption. It can be found in various Ayurvedic formulations for treating anaemia.

Therapeutic Benefits of Amalaki: Being a rich source of iron, amalaki is beneficial in the treatment & management od anaemia. It promotes overall health and immunity, similarly providing antioxidant properties which help fight infections, improve mantel performance and recover weakness from anaemia.

Amla has High content of Vitamin-C, it is beneficial in facilitating the absorption of non-heme iron which present largely in plant food and very less by human body. Its anti-oxidant activity helps to protect Red Blood Cells from oxidative damage.

Guduchi *(Tinospora cordifolia)*

In Ayurveda, Guduchi (Giloy) is considered to be very strong in the direction of fulfilling immunity and blood. It is one of the options that doctors will often recommend to patients who have chronic disease related anaemia.

Therapeutic Benefits of Guduchi includes:- The blood is purified, the liver functions well, and immune responses are maintained with giloy. It reduces inflammation and encourages the production of red blood cell.

Route: Orally- Mechanism of action: Guduchi acts as an immunomodulator and stimulates bone marrow to synthesize RBCs. It helps with detoxing, and allows the liver and kidneys to do a better job of processing waste so you can get more out of your nutrients in all around general blood quality.

Manjistha *(Rubia cordifolia)*

In Ayurveda, Manjistha is an important herb used as a blood purifier and detoxifying agent. Whereas, it is especially potent when the anaemia due to chronic disease or accumulation of toxins.

Therapeutic Effects: Manjistha helps in blood purification, improves circulation and increases RBC production. Patients with anaemia related to chronic inflammation and autoimmune disorders may benefit most.

Mechanism: Manjistha acts as a blood purifier, helping to extract toxins from the bloodstream and accelerating the purification of organs that produce clean and healthy blood such as liver & kidneys. Anti-inflammatory effects ease conditions associated with anaemia: some infections and chronic diseases.

Moringa *(Moringa oleifera)*

It is a "superfood" of high nutritional content. It has the leaves that are high in hundreds of vitamins and minerals to supply us including iron which Land Cures do one other good job for folks who need an herbal treatment if they have you been diagnosed with anaemia caused by lack of metal.

Heading from the therapeutic angle, Moringa helps in improving haemoglobin levels leading to improved natural resistance and great energy. It is also recommended as a dietary supplement for residents of low-income countries where iron-deficiency anaemia is prevalent, making it essential in the nutrition treatment.

Mechanism -The leaves of the Moringa tree represent a natural source of bioavailable iron and help other essential nutrients, such as vitamin C that increases its absorption. According to studies, regular consumption of the moringa leaves increase haemoglobin levels in anaemic patients.

Sesame Seeds *(Sesamum indicçæm)*

Another Ayurvedic practice, notesagrawal, is to consume sesame seeds for iron. It is usually recommended to consume with jaggery another source of iron in our diet as a natural supplement for anaemia.

Great Pain Reliever: Sesame seeds are rich in iron, copper, zinc and other minerals which are important for blood health. It increases the count of RBC and haemoglobin.

How it works: The elevated iron content found in sesame seeds increases the level of iron flowing around your body directetary When combined with jaggery which is also rich in iron, this age-old concoction transforms into an effective remedy for Iron-deficiency anaemia.

Mechanism of Action of Herbal Remedies in Anaemia

The herbal remedies for anaemia in Indian traditional system of medicine act through different mechanisms to provide symptomatic relief as well treat aetiology. These remedies work to elevate iron levels, boost nutrient intake and increase the production RBCs which all lead towards a healthier you. Given below is a brief view on how certain Ayurvedic herbs work in preventing and treating anaemia:

Iron Supplementation

Moringa leaves *(Moringa oleifera):* is an incredible source of vitamins as well as a great natural supplement for iron since it contains the bio-available type. The human body relies on iron to produce haemoglobin, the molecule within red blood cells that transports oxygen around our bodies. Consistent moringa intake will elevates blood iron, this can cure the sick who suffer from chronic or mild and moderate anaemia.

Sesame Seeds *(Sesamum indicum)*: These black seeds are very high in Iron, Copper etc. Iron present in sesame seeds adds to the synthesis of haemoglobin and RBC. Sesame seeds are only a good source of iron, but its combination with jaggery that is another rich in iron compound makes it more effective to improve the levels of Iron.

Enhancing Iron Absorption

Amalaki *(Emblica officinalis)*: Amla is a great source of Vitamin C which helps in the absorption of non-heme iron – comes from plant-based foods. Vitamin C changes iron to a more absorbable state that is taken up better from the digestive tract. With an improved absorption rate, the overall haemoglobin levels are elevated to fight iron-deficiency anaemia.

Stimulating RBC Production

Ashwagandha *(Withania somnifera)*: Ashwagandha is an adaptogenic herb reported to stimulate bone marrow growth with resulting production of healthy RBCs. It functions to revamp the blood and increase blood-cells production, which in retrospect helps restore haemoglobin levels.

Guduchi *(Tinospora cordifolia)*, which can stimulate the function of bone marrow and promote RBC production. It aids in the natural production of healthy blood cells & promotes overall good blood quality.

Support All Health and Immunity

Asparagus racemosus (Shatavari): Strengthening the body and promoting fertility, mainly in females. It supports overall health and energy, an important in case of anaemia that cause symptoms like fatigue or weariness.

Noteworthy Herbs In AMVAV: Punarnava (*Boerhaavia diffusa*): It is used to reduce inflammation and detoxify the body. It improves kidney and liver functioning which helps in the body process more nutrients for Red Blood Cell production.

Detoxifies the Body and Purify Blood

Manjistha (*Rubia cordifolia*)-Manjishta helps to purifies blood and clean the stream of bloodstream. It detoxifies and increases blood circulation which enhances the performance of liver, kidneys and other organs responsible for producing fresh blood from used one.

Guduchi (*Tinospora cordifolia*): Apart from increasing RBC production, gokshura stimulates the body's detoxification mechanisms. It can help purify the blood, prevent waste products from accumulating in your body and better organ function which helps make for healthier blood.

Improving Nutrient Utilization

Ashwagandha and Shatavari: These two herbs enhance the general absorption of nutrients in the body. Through aiding in metabolic processes and assisting with digestion, these play a role to ensure that vital nutrients like iron and Vitamin B12 are optimally used for RBC creation.

Its Anti-Inflammatory and Adaptogenic Properties

Ashwagandha: Due to its adaptogenic properties, it helps the body manage stress and inflammation (both of which can otherwise cause anaemia), especially in chronic disease-associated cases.

Guduchi and Punarnava: These herbs are useful in conditions leading to anaemia as they possess anti-inflammatory properties hence helpful in chronic cases. As they decrease systemic inflammation, and improve the health of our blood (RBCs too) in general.

Conclusion

Despite this, Anaemia exerts an extraordinary burden on global health and its etiology is multifaceted ranging from nutritional deficiencies to chronic diseases. Traditional remedies for anemia are largely based on food and iron supplementation but given that diet contribution to the intake of iron would be maximized, addition with traditional herbal treatments may acts as adjunctive therapy. Certain Ayurvedic herbs like Ashwagandha, Shatavari, Punarnava, Amalaki, Guduchi, Moringa has shown very good results in counteracting anaemia with multi wadisators actions It helps in increasing the iron levels, better absorption of nutrients, production of red blood cells and overall development. Additionally, they perform such benefits as detoxification effect, anti-inflammatory properties and immune system improvement that promote an effective way to handle with anaemic conditions along with its root causes. This is a natural remedy within the holistic medical concept in which herbal remedies are combined with conventional treatments. Conclusion, The Indian traditional Herbal or Unani Medicine provides a wide range of possible natural remedies for the treatment of anaemia, by itself and/or in combination with conventional therapies thereby providing a holistic approach to combat this common multi-faceted disorder.

Source of Funding- Self Funded

Conflict of Interest

Nil

Acknowledgement

The author would like to thank all his mentors. The data compiled here are collected over a period of time and may have been reproduced verbatim. Apologize to all researchers if in-advertently failed to acknowledge them in the references.

References

1. World Health Organization (WHO). (2021). Anaemia. Retrieved from [WHO website](https://www.who.int/health-topics/anaemiatab=tab_1)
2. Kotecha, P. V., & Patel, A. A. (2020). Iron Deficiency Anaemia in Children: Prevention, Diagnosis and Management. Journal of Pediatrics and Neonatology, 11(1), 42-49.
3. Kaur, P., & Goyal, A. (2021). Role of Ayurvedic Herbs in the Management of Anaemia. International Journal of Herbal Medicine, 9(3), 12-19.
4. Gupta, R., & Shukla, S. (2019). Ashwagandha (Withania somnifera): A Comprehensive Review on its Efficacy in Anaemia. Journal of Ethnopharmacology, 244, 112-123.
5. Tiwari, S., & Talreja, S. (2020). Insomnia: A study on sleeping disorder with the reference of ayurvedic herbs. *Journal of Pharmaceutical Sciences and Research*, *12*(11), 1375-1379
6. Sharma, S., & Singh, V. (2018). Shatavari (Asparagus racemosus): Pharmacological Effects and Therapeutic Uses. Ayurveda Research Journal, 13(2), 88-96.
7. Patel, V., & Desai, M. (2020). Punarnava (Boerhaavia diffusa): A Review of its Phytochemistry and Health Benefits. Phytotherapy Research, 34(1), 17-28.
8. Nair, P. M., & Bhat, S. (2021). Amalaki (Emblica officinalis): Its Role in Enhancing Iron Absorption and Blood Health. Journal of Traditional and Complementary Medicine, 11(4), 331-340.
9. Talreja S, Tiwari S. A critical overview on Moringa oleifera. J Glob Trends Pharm Sci. 2020;11:8451-7.
10. Saini, R. K., & Shetty, N. (2019). Guduchi (Tinospora cordifolia): Its Traditional Use and Modern Applications in Anaemia Management. Herbal Medicine Journal, 15(2), 55-63.
11. Singh, A., & Sharma, P. (2022). Manjistha (Rubia cordifolia) in Blood Purification and Anaemia Treatment: A Review. Journal of Herbal Medicine, 22(3), 207-215.
12. Vijayan, V., & Rajasekaran, S. (2020). Moringa (Moringa oleifera) as a Nutritional Supplement for Anaemia: Evidence and Applications. Nutritional Medicine Studies, 17(4), 295-305.
13. Jain, A., & Kumar, R. (2021). Sesame Seeds (Sesamum indicum) for Iron-Deficiency Anaemia: A Traditional and Modern Perspective. International Journal of Food Sciences and Nutrition, 72(5), 591-602.
14. Tiwari, S., & Talreja, S. (2020). Human immune system and importance of immunity boosters on human body: a review
15. Chopra, R. N., & Raina, M. K. (2018). Traditional Uses and Modern Research of Ayurvedic Herbs in Anaemia Management. Indian Journal of Natural Products and Resources, 9(1), 6-14.

How to cite this article: Prof. Dr. Shashank Tiwari, and Shreya Talreja. "INTEGRATIVE APPROACHES TO ANAEMIA TREATMENT: THE POTENTIAL OF INDIAN HERBAL REMEDIES". *Tropical Journal of Pharmaceutical and Life Sciences*, vol. 11, no. 4, Aug. 2024, doi:10.61280/tjpls.v11i4.163.