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SYSTEMATIC REVIEW

Plant-based management of Iron Deficiency Anemia (IDA) in East Africa community: a systematic review

[version 1; peer review: 1 approved, 2 not approved]

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Abstract

Background

Iron Deficiency Anaemia (IDA) is a major public health challenge in East Africa, particularly affecting children and women. Conventional

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therapies are often limited by accessibility and cost, prompting interest in plant-based interventions as affordable and locally available alternatives. This review explores the potential of medicinal plants in managing IDA, focusing on their phytochemical composition, mechanisms of action, and haematological effects.

Methods

A systematic search of PubMed, Scopus, and Web of Science databases was conducted on July 17, 2024. The search strategy utilised Boolean operators and keywords related to plants, IDA management, and East Africa. Studies meeting inclusion criteria were peer-reviewed articles published in English that evaluated plant-based treatments for IDA in preclinical or clinical trials. A total of 30 eligible studies were included after screening and quality assessment following PRISMA guidelines.

Results

The review identified plants such as *Moringa oleifera*, *Phyllanthus emblica*, and *Telfairia occidentalis* as effective in improving haemoglobin levels, red blood cell counts, and other haematological indices. Mechanisms include enhanced iron absorption, antioxidant activity, and stimulation of haematopoiesis. Extraction techniques commonly used were high-performance liquid chromatography (HPLC) and aqueous methods. Key phytochemicals like flavonoids, saponins, and phenolic compounds played critical roles in IDA management. Despite promising outcomes, variations in treatment duration and protocols were noted, highlighting the need for standardisation.

Conclusion

Plant-based therapies offer accessible, cost-effective solutions for managing IDA in East Africa, leveraging local resources and phytochemical properties. However, further pharmacological and toxicological studies are essential to confirm safety and efficacy. This review emphasises the potential of medicinal plants in addressing IDA and calls for the exploration of underutilised plant species and the development of standardised therapeutic protocols.

Keywords
Iron Deficiency Anemia (IDA), Plant-based therapies, Phytochemicals, Hematological indices, East Africa

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Introduction

Anemia is a blood disorder characterized by decreased haemoglobin (Hb) concentration. It is defined as haemoglobin levels <13.0 g/dL in men and <12.0 g/dL in women.[1] Other factors that can alter an individual Hb level include ethnicity and physiological status.[2] Iron deficiency anemia (IDA) is one of the most common causes of anemia. It occurs when there is insufficient iron in the body to produce red blood cells, an important cellular component of blood for the distribution of oxygen to tissues. Sources of iron include protein-rich diets such as fish and meat.[3] Studies have shown that IDA accounts for about 50% of anemia in children.[4] Among other haematological disorders, anemia is one of the biggest causes of disability worldwide and a major public health concern.[5] Recent statistics have shown a progressive increase in the prevalence of anemia in developed and developing countries in the past decade, especially in sub-Sahara Africa with children accounting for 61.4%.[6,7]

An estimate from the United Nations revealed that East Africa contributes about 7% of the world population and 21.4% of children in this population suffer from IDA, probably due to the socio-economic status of people living in this region.[8] According to the 2016 Uganda Demographic and Health Survey (UDHS), the prevalence of iron deficiency anaemia increased from 23% in 2011 to 53% in women of reproductive age and 49% in children aged 6-59 months.[9] In Kenya, 69% of children under 5 years old bear the brunt of iron deficiency anemia.[10] Sunguya et al.[11] reported that the prevalence of IDA among pregnant women in Tanzania has risen to 57% thus the need for immediate intervention.

Several pharmacological interventions have been employed in the management of IDA, especially in East Africa. There is increasing scientific evidence that interventions with medicinal plants have gained global attention in recent years.[12] Plant sources are known to contain phytochemicals with proven pharmacological efficacies in disease conditions. These sources are relatively available and affordable in low and middle-income countries.

Given the discrepancies in recent published studies regarding plant-based management of IDA, we carried out a systematic review. This review aimed to assess different published studies on plant-based management of iron deficiency anaemia (IDA) in the East African community.

Materials and methods

A comprehensive literature search was systematically conducted across the Web of Science (WoS), Scopus, and PubMed databases on 17th July 2024. The search employed the following terms: Plant, management, "iron deficiency anemia", and "East Africa." Boolean operators (AND/OR/NOT), alternative terms, and various delimiters such as quotation marks, parentheses, wildcards, and asterisks (*) were utilized to create the search strategy outlined in Table 1, as reported by Fasogbon et al.[13–15] The search was restricted to peer-reviewed articles published in English. The paper selection process adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines[16,17] and followed the inclusion and exclusion criteria presented in Table 2. The risk of bias was assessed as shown in Figure 5 (a-b).

Results

Search results

The Web of Science database search produced 50 articles, Scopus yielded 212, and PubMed identified 30, bringing the total to 292 articles across the three databases. The search results from each database were then exported and imported into Rayyan, a platform specifically designed for systematic review processes, where they were screened based on the inclusion and exclusion criteria.[18] On the platform, 78 duplicate articles were removed. The remaining 214 records were initially screened by evaluating their titles and abstracts, which led to the exclusion of 153 articles. Following a more

Table 1. Search strategies.

Database	Search strategy
Scopus	(Plant*) AND (treat* OR manag* OR therap* OR control* OR ameliorat*) AND ("iron deficiency anemia" OR "iron-deficiency anemia")
WoS	(Plant*) AND (treat* OR manag* OR therap* OR control* OR ameliorat*) AND ("iron deficiency anemia" OR "iron-deficiency anemia")
PubMed	((plant*[title/abstract]) AND ((treat*[title/abstract]) OR (manag*[title/abstract]) OR (therap*[title/abstract]) OR (control*[title/abstract]) OR (ameliorat*[title/abstract])) AND (("iron deficiency anemia"[title/abstract]) OR ("iron-deficiency anemia"[title/abstract])) NOT (review [Publication Type]))

Table 2. Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
• Studies involving the IDA treatment	• Studies not focusing anemia due to iron deficiency as primary or secondary cause
• Treatment must be by plant extract or plant-based product	• Studies focusing on any other type of anemia other than IDA
• Studies must report the impact of the treatment	• Studies that did not describe the impact of plant or plant-based product on IDA
• Studies on either preclinical or clinical trials	• Review articles, editorials, commentaries, book chapters and conference abstracts
• Peer-reviewed articles published in English	• Non-English publications

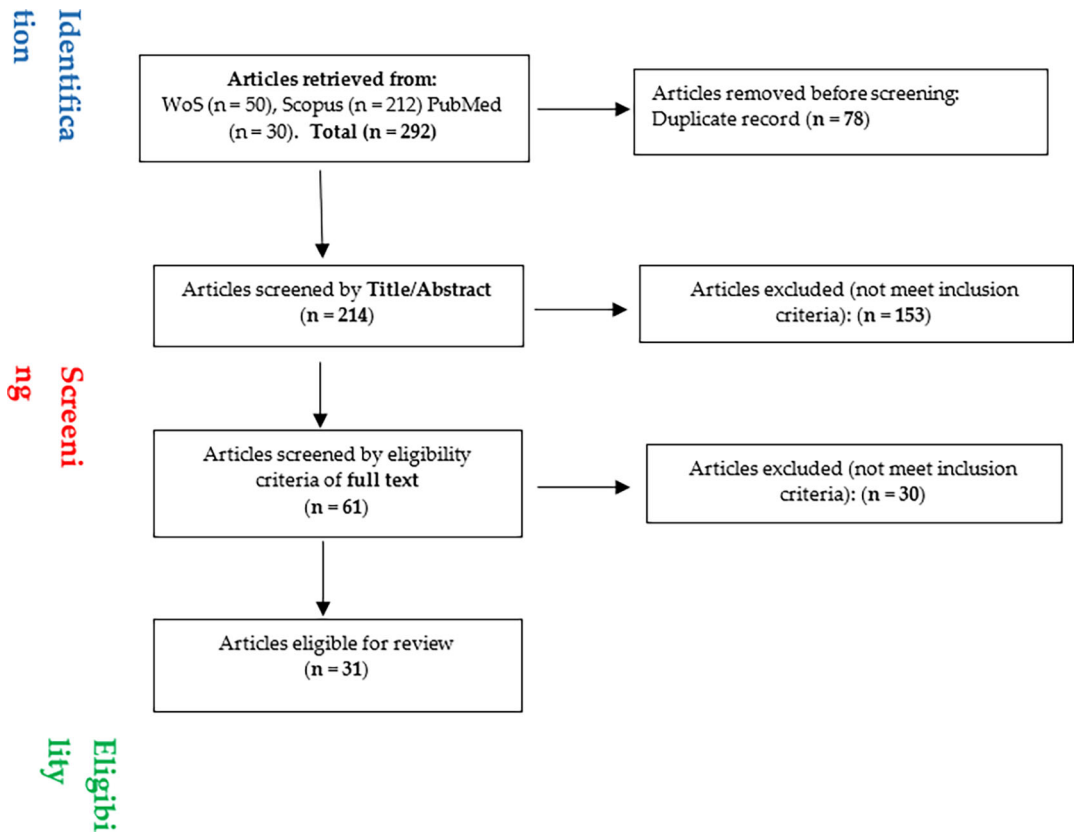

Figure 1. PRISMA flow chart for study selection.

detailed full-text review, an additional 30 articles were excluded for not meeting the inclusion criteria. In the end, 30 articles were included in the study after passing the eligibility criteria and quality assessment (Figure 1).

Table 3 above outlines the mechanisms of action, effects on anemia-related parameters, plants used, plant parts studied, duration of treatment, and geographic origin of the studies.

Mechanisms of action and impact on anemia parameters

Various plants and plant-based combinations have been studied for their roles in increasing hemoglobin levels, red blood cell counts, hematocrit, and other indices of blood health. From the table above, some plants show mechanisms related to enhanced iron absorption or bioavailability, antioxidant action, or stimulation of hematopoiesis. Examples are *Moringa*

Table 3. Mechanisms of action of the plant and parts used in the study.

Mechanism of IDA treatment/ Amelioration	Effect on parameters	Plant	Part of plant	Duration	Country	Reference
Not specified	Increase Hb and pcv, at 2g/dl and 4g/dl, MCV, MCH, MCHC and RCC insignificant at 2g/dl and significant at 4g/dl	Emblic myrobalan	Fruits	60 days	Pakistan	19
Mixture of honey, dates, and amla (Indian gooseberry)	The combination of honey, dates, and amla boosts hemoglobin levels, increases RBC count, and reduces fatigue, contributing to improved overall vitality	Phyllanthus emblica, Indian gooseberry	Fruits	3 months	India	20
Increased Hemoglobin Levels, increase in Vitamin C levels	significant increase in hemoglobin levels, mean levels of Vitamin l and iron level	Phyllanthus emblica, Cucurbita pepo,Saccharum officinarum	Amla fruit, Jaggery no part specified, Pumpkin leaves	60 days	India	21
Reducing phytate boosts iron bioavailability, and adding Moringa oleifera leaves enhances absorption and nutrition	Not specified	Moringa oleifera	Leaves	12 weeks	Switzerland	22
Increased iron intake from Hibiscus sabdariffa meals is supported by vitamin C enhancing absorption	Not specified	Microalgae/ Schizochytrium spp	Not specific	xxxx	Ghana	23
Not specified	Lacto-ovo vegetarians and vegans had lower hemoglobin, erythrocyte, and hematocrit levels, with increased RDW, compared to omnivores	Hibiscus sabdariffa		Not specific	Spain	24
Treatment of IDA in restoration of hematopoiesis by adding decoction of the plant's aerial parts	Effect on erythrocytes (red blood cells), platelets and leukocytes (white blood cells)	Urtica chamaedroydes	Leaves, stems, and flowers	34 days	Mexico	25
Through the proliferation of hematopoietic stem cells	Increase RBC, Hemoglobin, Hematocrit decreased μ-RBC, & MRBC), with no significant changes in Platelets	Angelica gigas	Roots and rhizomes	7 days	South Korea	26
Not specified	Haemoglobin, packed cell volume and red blood cells	Sorghum bicolor	Aqueous Moench stem bark	6 weeks	Nigeria	27

Table 3. *Continued*

Mechanism of IDA treatment/ Amelioration	Effect on parameters	Plant	Part of plant	Duration	Country	Reference
Not specified	RBC count, hemoglobin, and hematocrit	Ajwa Date	Fruits	Not specify	Indonesia	28
Iron Supplementation, Improved Iron Storage, and Prevention of Iron Deficiency	RBC count, hemoglobin, and hematocrit	Caulis	Caulis extract	42 days	China	29
Iron Supplement Improved Iron Storage & Prevention of Iron Deficiency	Hemoglobin (Hgb), and Anemia Prevalence	Lentils	Seeds	4 months	Bangladesh	30
Not specified	Hemoglobin, Ferritin, Erythrocyte	Flacourtia indica	Leaf	3 months	India	31
Not specified	Hematocrit, MCV, MCH, MCHC, and RDW	Moringa oleifera	Ethanol Leaf extract	3 weeks	Indonesia	32
Anti-oxidative action of chlorophyll is as a hydrogen donor to break the chain reaction, due to the porphyrin in its chemical structure	CSA increased the levels of Hb, serum iron and serum ferritin	Pearl millet (Pennisetum americanam)	Seeds	30 days	India	33
Increase in iron bioavailability	Increased Hb,serum iron and serum ferritin levels	Telfairia occidentalis	Leaves and seeds	10 days	United Kingdom	34
Not included	Iron and Hb determined	Mangifera indica L (mango)	Stem bark & leaves	14 days	Nigeria	35
Effects of both iron and phytochemicals of the extract induced boost RBC indices in the iron deficient rats	Increased Hb, concentration, PCV volume; RBC, MCV, & WBC	Plant based diet	Not specified	Not specify	Indonesia	36
Not specified	Increased Hb, concentration, PCV volume; RBC, MCV, & WBC	Angelica sinensis	Dry roots of A. sinensis (Polysaccharide)	14 days	China	37
ASP inhibit hepcidin expression in vivo by stimulating erythropoietin secretion and interrupting two other major pathways of hepcidin regulation	Improves on haematological factors	Punica granatum L (Pomegranate)	Fruits	5 hours	India	38
Increased iron bioavailability in the presence of PJ and Other organic acids, sugars and polyphenols present in PJ might as well have a role in modulation of iron bioavailability	Pomegranate Juice Improves Iron Uptake and Assimilation in Caco-2 Cells. PJ Enhances Iron Uptake and Assimilation in HepG2 Cells	Moon dal washed (MDW), red lentils (RL), chickpeas (CP), green lentils whole (GLW), and yellow split peas (YSP)	Legume seed	Not specified	Canada	39

Table 3. *Continued*

Mechanism of IDA treatment/ Amelioration	Effect on parameters	Plant	Part of plant	Duration	Country	Reference
Increased hepcidin mRNA correlates with bioavailable iron, while reduced DMT1 and TfR1 reflect decreased iron uptake	Iron extracted from defatted microalgae seemed to be effective in alleviating moderate anemia	Defatted Nannochloropsis oceanica (DGM) (defatted microalgae)	Whole plant	10 weeks	United stated	40
The macro and micronutrient content in Moringa powder is thought to work synergistically to increase Hb levels in research subjects significantly	Supplement (P2) increased hemoglobin level	Moringa (Moringa oleifera)	Leaves (capsules)	60 days	Indonesia	41
ASP significantly down-regulates JAK1 expression, similar to its effect on phospho-JAK1, while rhEPO has a stronger inhibitory effect on JAK1 and its phosphorylation	Increased, RBC, platelets, hematocrit, MCV, MCH & MCHC	Angelica sinensis	Polysaccharides from Angelica sinensis	16 days	China	42
The increase in hemoglobin and erythrocytes in this study is attributed to the presence of iron found in moringa leaves	Increase in hemoglobin and erythrocyte levels	Moringa tree (Moringa oleifera)	Leaves	15 days	Indonesia	43
The mechanism of antioxidative action of chlorophyll is as a hydrogen donor to break the chain reaction, due to the porphyrin in its chemical structure	CSA increased the levels of Hb, serum iron and serum ferritin	Sauropus androgynus (L) Merr (katuk)	Leaves	37 days	Indonesia	44
Increase in iron bioavailability	Increased Hb, serum iron and serum ferritin levels	Low-Phytic Acid Beans and Biofortified Beans	Seeds	14 days (double meal)	Rwanda	45

oleifera, *Angelica gigas, and Telfairia occidentalis.* Some other plants, such as *Emblic myrobalan* and *Phyllanthus emblica*, have significantly improved hematological parameters after specific durations.

Plant parts and study locations

Commonly used plant parts include fruits, leaves, roots, seeds, and bark. The studies span multiple countries, including India, Pakistan, Indonesia, China, Nigeria, Rwanda, and Ghana, highlighting the global interest in plant-based anemia management. Some studies explored combinations of plant products, such as honey, dates, and *amla*, which showed synergistic effects in boosting Hb levels and alleviating fatigue.

Duration of intervention and phytochemical contributions

Treatment durations vary widely, from as short as 5 hours (*Punica granatum*) to a few weeks (*Moringa oleifera*), and several months (*lentils*). These variations emphasize the need to standardize treatment protocols for better comparison and effectiveness. From the table, specific phytocompounds, such as chlorophyll, polyphenols, and vitamin C, contribute to increased iron bioavailability and hematological improvements.

Key: Macro-erythrocytes (MRBC), Micro-erythrocytes (µRBC), PCV, packed cell, RBC, red blood, MCV: mean corpuscular volume, WBc, MCH, mean corpuscular hemoglobin MCHC.

Biochemical techniques used for the extraction of the plants extracts

Figure 2 presents the biochemical techniques used for the extraction of plant extracts studied in the systematic review. The chart highlights that a significant portion of the studies utilized HPLC, which accounts for the largest percentage (17.65%). HPGC, GSMC, and phytate assay follow as the second most common method (11.76%). Common solvents of extraction are water (aqueous), ethanol, methanol, and hexane. The aqueous method is favored due to its simplicity, cost-effectiveness, and suitability for water-soluble polar compounds like flavonoids and polyphenols.[46] Ethanol is widely used for its ability to extract both polar and non-polar compounds, making it versatile for isolating a range of bioactive phytochemicals.[47] The choice of extraction method influences the types of bioactive compounds isolated and their subsequent effectiveness in treating iron deficiency anemia. For example, while aqueous extraction might favor compounds with direct iron bioavailability enhancement properties, ethanolic and methanolic methods may yield a wider variety of bioactives, including those with antioxidant and hematopoietic properties. The prevalence of aqueous

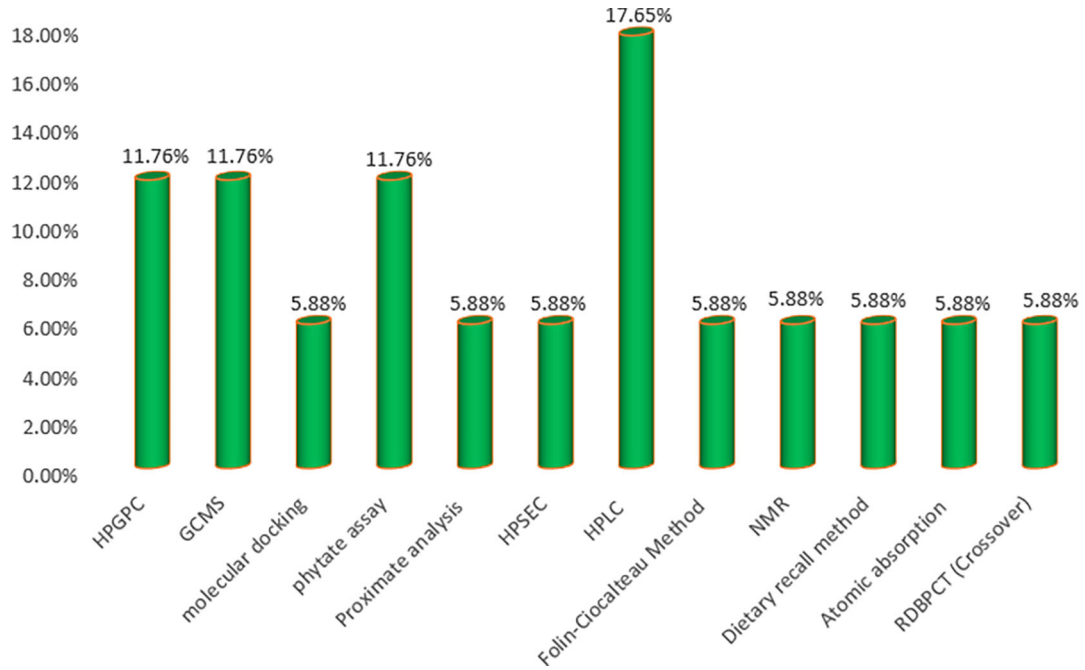

Figure 2. Biochemical techniques used for the extraction of the plants extracts.

and ethanolic extractions indicates a preference for techniques that are more feasible in low-resource settings, aligning with the focus on plant-based therapies in developing regions.[46]

Vitamin, mineral, and carbohydrates compositions of the plants used in the management of anemia

Figure 3 illustrates the vitamin and mineral compositions of the plants used in the management of anemia. Iron (36%) is the most prominent mineral highlighted, reflecting its direct role in addressing iron deficiency anemia (IDA). This is expected since IDA arises from insufficient iron required for hemoglobin synthesis. Vitamin C (20%) appears frequently as a vital nutrient. Its role in enhancing iron absorption, particularly from plant-based sources (non-heme iron), highlights its importance in these therapies. Vitamin A (12%) was the second most abundant vitamin. Vitamin A is noted for its antioxidant potential[48] which contributes to hematopoiesis. Folic acid (4%) is also notable in the chart, as it supports red blood cell formation, highlighting its relevance in anemia management. The chart in Figure 3 highlights the multi-dimensional approach of plant-based management, where the synergy of vitamins and minerals aids not only in addressing iron deficiency but also in improving general nutritional status and hematopoiesis. Notably, plants with high iron content combined with vitamin C are particularly effective, as vitamin C mitigates inhibitors of iron absorption, such as phytates and tannins.[49]

Phytochemical constituents of the plants used in the management of anemia

Figure 4 provides the summary of the phytochemical constituents of the plants used in the management of anemia, highlighting the compounds responsible for therapeutic effects. The phytochemical constituents' range was: Flavonoids>Saponins>Phenolic Compounds> Alkaloids>Others.

Flavonoids (26%) dominate the chart. Flavonoids are known for their antioxidant properties and ability to enhance iron bioavailability. They can chelate free iron, reducing oxidative stress while also protecting erythrocytes from damage.[50] Saponins (11%) are bioactive compounds that may stimulate erythropoiesis (red blood cell production) and improve gut health, aiding in the absorption of iron and other nutrients.[49] Phenolic compounds (10%) contribute to antioxidant activity, protecting red blood cells from oxidative damage and supporting the overall health of hematopoietic cells. They also enhance the bioavailability of iron in some situations.[51] Alkaloids (10%) are associated with hematopoietic activity and may stimulate red blood cell production, making them valuable in combating anemia. Others are steroids, terpenes, tannins, and glycosides, which are potentially beneficial in synergistic interactions with the primary phytochemicals. The high presence of flavonoids and phenolic compounds suggests a focus on protecting red blood cells and hematopoietic tissues from oxidative stress, a common challenge in anemia. While tannins can inhibit non-heme iron absorption, their interaction with other phytochemicals (e.g., flavonoids and phenolics) may mitigate this effect. Thus, the combined presence of diverse phytochemicals points to the potential for synergistic effects, where compounds work together to

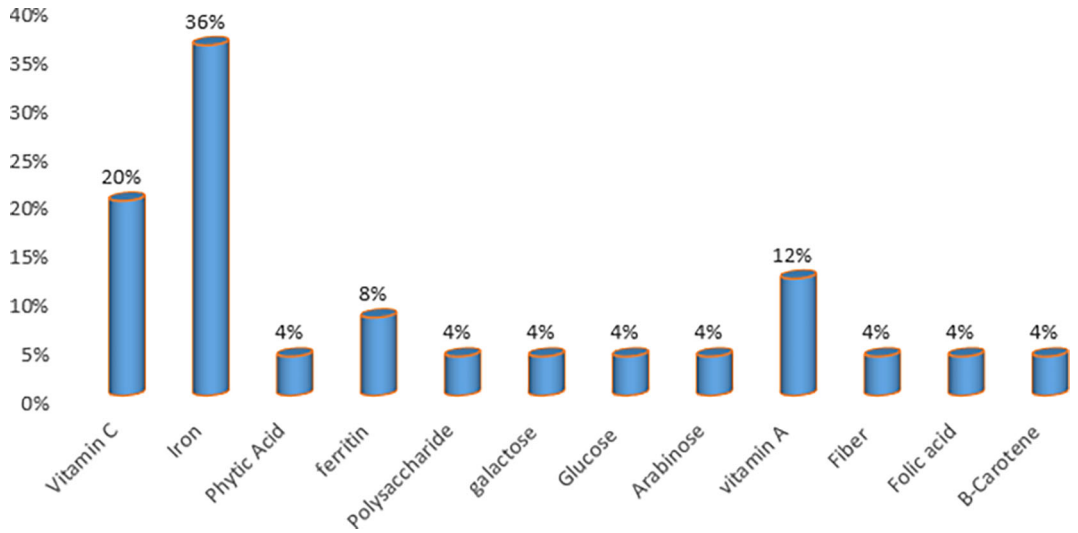

Figure 3. Vitamin, mineral, and carbohydrates compositions of the plants used in the management of anemia.

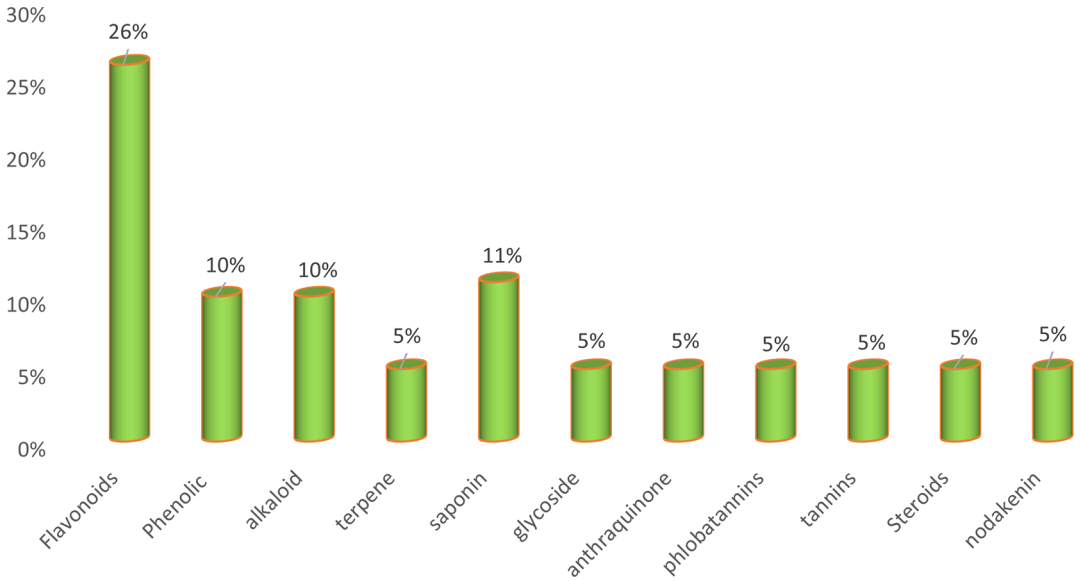

Figure 4. Phytochemical constituents of the plants used in the management of anemia. (a) A revised tool to assess the Quality in randomized trials (RoB 2). (b) SYRCLE's risk of bias tool for animal studies.

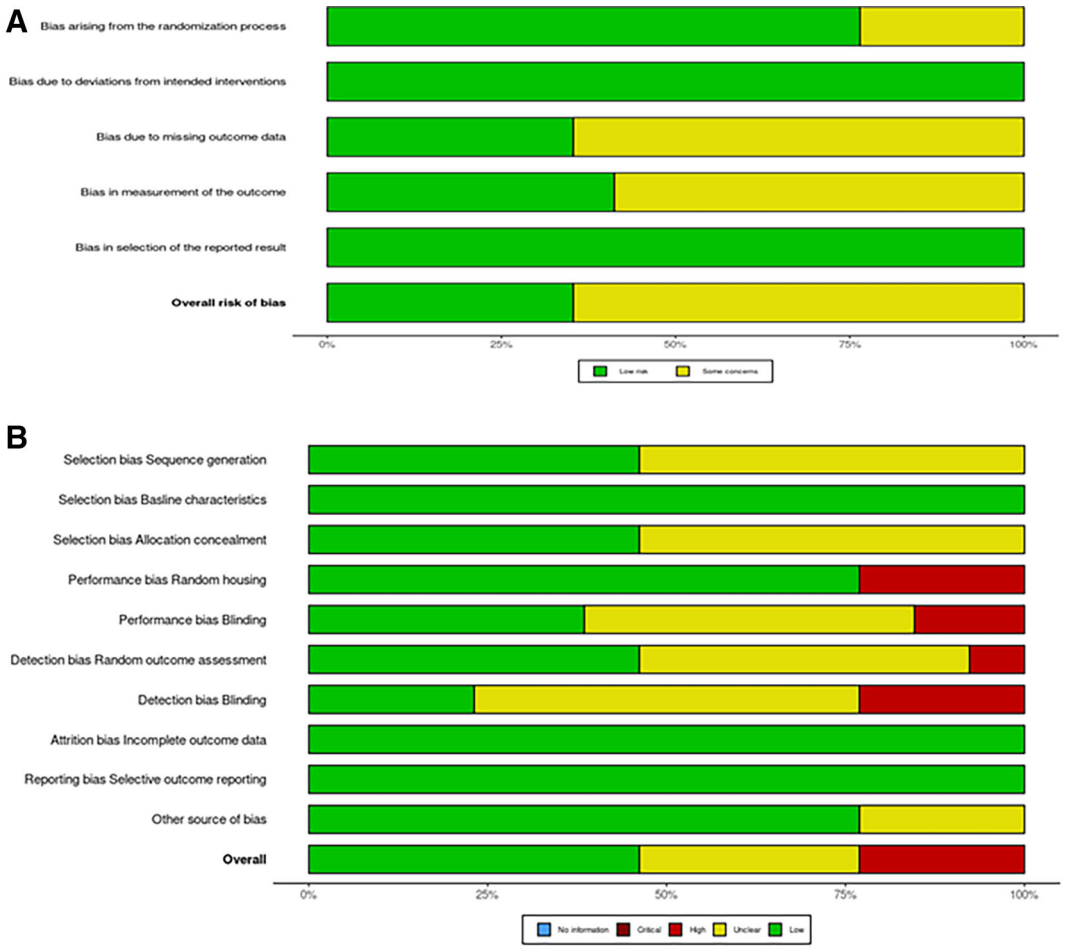

Figure 5. (a-b): Risk of bias analysis of the included articles.

enhance therapeutic efficacy, including improving gut health, reducing inflammation, and stimulating red blood cell production.

Discussion

After eligibility screening, only 30 studies from the 292 results of the first literature search were included in the qualitative analysis. Furthermore, there is still a significant amount of information lacking, as seen by the yearly trend of ethnobotanical research on plants used to treat anemia. Since its start, few anemia-related ethnobotanical investigations have been done in East Africa. On the other hand, we have the most ethnobotanical research locally documented in East Africa. Africa has a rich cultural heritage, but there are still more areas to investigate to close the knowledge gap. There is a large probability that other plants utilized for anemia still need to be documented within the African region.

Iron deficiency anemia (IDA) is a condition where the body lacks sufficient iron to produce hemoglobin, a protein in red blood cells that transports oxygen. The pharmacological benefits of bioactive chemicals found in traditionally used plants on iron deficiency anemia have been shown in several research.[52] Hematological indices, including hemoglobin, hematocrit, red blood cell (RBC), mean corpuscular hemoglobin concentration (MCHC), mean corpuscular volume (MCV), and mean corpuscular hemoglobin (MCH), were used to assess the anti-anemic activity of the plants under study, in particular *Telfairia occidentalis.* In an experimental study conducted on albino rats, it was found that the ethanol leaf extract of Telfairia occidentalis induced regeneration of RBC, hematocrit, hemoglobin, MCV, and MCH (Cotoraci et al., 2021). Furthermore, *Telfairia occidentalis* leaf raised PCV levels in a trial on antisickling in sickle cell anemia patients.[53]

According to another study, the main nutrient for spinal cord hematopoiesis is the particular iron found in *moringa leaves.*[54] Similarly, *Moringa leaves'* protein and amino acid content function as hematopoietic growth agents. High levels of protein and amino acids, which are essential for controlling blood cell differentiation and proliferation, were reported in its leaves. Additionally, the body absorbs iron more readily due to the vitamin C in *Moringa leaf* extract and other plants.[55] Its potential effects on the expression of liver hepcidin mRNA expression are suggested by the finding that dietary iron from plants was more effective than ferric citrate in curing iron deficiency in male Wistar rats in a study conducted.[52,56]

The biochemical techniques used for the extraction of plants in this review revealed that HPLC and GSMC form the bulk of the percentage of techniques used. The choice of a quick and accurate technique to measure the quantity of iron in plant tissues and fluids is a major technological challenge for assessing iron insufficiency in plants. As a precise instrument, HPLC can be used to separate complicated biological samples or synthetic chemicals, analyze organic molecules, confirm medicine authenticity, provide quantitative data, monitor the course of disease therapy, and discover contaminants and degradants in raw materials and final products.[57] This makes HPLC the most reliable method for the extraction of plant products used in the treatment and management of IDA. Studies have also shown that the iron status of plants under normal growth conditions can be accurately and simply analyzed utilizing an HPLC-based technique.[58]

Among the number of vitamins and minerals identified in works of literature used for this review, Iron constitutes about 36%. IDA can be seen in conditions such as hemorrhage, prolonged menstruation, hookworm infections, and inadequate consumption iron-rich diet.[59] However, other disease conditions can also prevent iron from being absorbed into the body. Heme (Iron) is a key component of hemoglobin, the oxygen-carrying protein that gives the red blood cell its reddish color. The binding affinity of iron to the protein globin enhances erythropoiesis and the oxygen-carrying capacity in red blood cells. IDA occurs when there is insufficient iron to bind with globin[60] (Obeagu and Obeagu, 2025). Medicinal plants within East Africa have been proven to increase red cell production due to their high iron content.

Phytochemicals present in these plants reveal their anti-inflammatory and antioxidant properties in the management and treatment of IDA within countries in East Africa. A study has shown that flavonoids can control iron absorption and homeostasis, so they may be useful in the treatment of IDA.[61] Additionally, flavonoids can be utilized to improve red blood cell indices in conjunction with iron supplementation. Also, by controlling the expression and activity of proteins that govern iron uptake and metabolism, flavonoids can have an impact on iron homeostasis and regulate red blood cell production.[62] Tannin and saponins are active ingredients of secondary metabolites that are recognized to provide several health benefits, including their antioxidant and antibacterial properties.[63] These properties can also prevent disease conditions that can result in IDA and improve red blood cell indices.

Conclusion

Thirty screened ethnobotanical articles that documented the use of medicinal plants for the treatment of IDA within the East African region were collected for this systematic review. An increase in traditional medicine research has noted for decades. However, more scientific investigation is required for medicinal plants that are used for treatment and

management of iron deficiency anemia. Ethnobotanical research on IDA is still lacking in some East African regions. The different methods of extraction, minerals and vitamins as well phytochemicals of medicinal plants used to treat IDA in East Africa was demonstrated by this systematic review. To ascertain and confirm the safety and effectiveness of these medicinal plants in treating IDA in the general population, pharmacological and toxicological research is still required. Our current review will direct future researchers to examine unexplored medicinal plants in detail and evaluate their characteristics, focusing on human toxicity and safety.

Data availability statement

Data supporting the findings of this study are available in the Open Science Framework

DOI: https://doi.org/10.17605/OSF.IO/U95Z8

This project contains following files:

- PRISMA_2020_checklist.docx
- Revised-Anemia systematic review manuscripts-2025.docx

Data are available under CC0 1.0 Universal license

Acknowledgments

Not applicable.

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Reviewer Report 27 December 2025

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Nemanja Živanović
University of Novi Sad, Novi Sad, Serbia
Marija Lesjak
University of Novi Sad, Novi Sad, Serbia

Iron deficiency anemia (IDA) is widely prevalent around the world, with a higher prevalence in African countries due to socio-economic factors. Thus, the review of alternative and widely affordable treatments for IDA would be of wider interest. However, there is significant room for manuscript improvements.

The introduction is very brief. The symptoms of anemia are not described, nor is the socio-economic burden that high prevalence of anemia causes.
Since the review focuses on plant-based treatments, it is necessary to provide information about the impact of the diet on iron metabolism and anemia, with a particular emphasis on plant compounds and their effect on iron absorption.

The text on the left side of Fig. 1 should be in one line.

Table 3 should be in landscape mode to improve readability.

Table 3, reference 19 is a book chapter, and in the inclusion/exclusion criteria, authors have listed as exclusion criteria: “Review articles, editorials, commentaries, book chapters and conference abstracts”, the authors should cite the original study.

Table 3, reference 20 is a review paper, and in the inclusion/exclusion criteria, authors have listed as exclusion criteria: “Review articles, editorials, commentaries, book chapters and conference abstracts”, the authors should cite the original study
Table 3, reference 21 – in the reference list is a paper that describes the antimalarial activity of *Coriandrum sativum* Linn. while in the table is described a different study.

References in Table 3 do not match the study descriptions; they need to be double-checked and

renumerated.

There are no clear descriptions of the mechanism of action for plants; the duration of the study and the dosages used are not clearly stated (Page 6, Table 3, row 5 – what's the meaning of "XXXX"?).

The section "Biochemical techniques used for the extraction of the plants extracts" and Figure 2 need major improvements and corrections. This section indicates that the authors do not have a thorough understanding of the subject, which is concerning, given that this short review has 31 authors listed. Techniques shown in Figure 2 are used for chemical characterisation of the plant extracts not for the extraction of plants. Moreover, it is stated that ethanol is commonly used of plant extraction but is not stated in which form the extracts are used for IDA treatment.

Figure 3. should be moved into the section "Vitamin, mineral, and carbohydrates compositions of the plants used in the management of anemia" where it's first cited in the text.

Figure 5 is not mentioned anywhere in the manuscript.

This manuscript does not give any overview of IDA, the influence of plant components on iron absorption, nor any clear conclusions regarding which plants and in what dosages can improve IDA, nor conclusions regarding possibilities for further research and use of plants and plant-based products for IDA treatment. The article in its present form should not be published.

Are the rationale for, and objectives of, the Systematic Review clearly stated?
No

Are sufficient details of the methods and analysis provided to allow replication by others?
Yes

Is the statistical analysis and its interpretation appropriate?
No

Are the conclusions drawn adequately supported by the results presented in the review?
No

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)
Not applicable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Biochemistry, medicinal plants, natural products, food chemistry, Iron metabolism, chemical characterisation

We confirm that we have read this submission and believe that we have an appropriate level of expertise to state that we do not consider it to be of an acceptable scientific standard, for

reasons outlined above.

Reviewer Report 27 November 2025

https://doi.org/10.5256/f1000research.186450.r434602

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Valentina Mittova
University Geomedi, Tbilisi, Tbilisi, Georgia

The article should be rejected in its current form and reconsidered after major revision.
The main reason for the lack of results and discussion section is a brief and fragmentary attempt to describe the topic, rather than the article. Main points are indicated below
Introduction
Since the study is dedicated to plant-based management of anaemia, at least the major findings in this field, as well as the main compounds isolated from plants and used for the treatment, should be described.

Materials and methods
The search for the review was performed within one day. This statement is highly doubtful.

The result section eventually does not describe any results or mechanism and consists of a big Table with several drawbacks:
1. The extraction method should be indicated
2. The use for the treatment should be indicated—whether the solution (extract) should be taken, how often, etc.
In Fig.2,3,4, all column names should be capitalized and not alternate in a way that some are capitalized and some are in lowercase.

The result section should discuss the mechanism of action of the main phytochemical compounds used to treat anaemia.
Discussion is full of general statements like
Phytochemicals present in these plants reveal their anti-inflammatory and antioxidant properties in the management and treatment of IDA within countries in East Africa.

Which plants, and how do antioxidant properties help to treat IDA?

Discussion and Conclusion do not provide any insight into the problem or useful information for further research, containing typos, like:
Moringa leaves' or *moringa leaves',* the name of the species should be in italics and capitalized, the word "leaves" should not.

Are the rationale for, and objectives of, the Systematic Review clearly stated?

No

Are sufficient details of the methods and analysis provided to allow replication by others?
No

Is the statistical analysis and its interpretation appropriate?
No

Are the conclusions drawn adequately supported by the results presented in the review?
No

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)
No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Biochemistry, plant physiology, drug design, antioxidants

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 25 October 2025

https://doi.org/10.5256/f1000research.186450.r415683

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Progress Arhenrhen Obazelu
Medical Laboratory Science, University of Benin, Benin, Edo State, Nigeria

Abstract is properly written
Introduction is well written
Materials and Methods are properly outlined
Results, Discussion and Conclusion are all well written
kudos to all the authors of this manuscript.

Are the rationale for, and objectives of, the Systematic Review clearly stated?
Yes

Are sufficient details of the methods and analysis provided to allow replication by others?

Yes

Is the statistical analysis and its interpretation appropriate?
Yes

Are the conclusions drawn adequately supported by the results presented in the review?
Yes

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Hematology, Transfusion Science, Gene Expression Studies, Phyto-medicine, Medicinal Plants

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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