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A Brief Review On Various Indian Medicinal Plant Having Anti Anemic Activity

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Abstract :– Anaemia is a common form of nutritional disorder, the principal cause of which is iron deficiency. It is prevalent in both industrialised and developing countries. Infants, children, woman of child bearing age, pregnant woman and elderly are considered to be particularly vulnerable to iron deficiency because their intake and absorption is poor. Iron deficiency is the most common signal nutrient deficiency disease in the world, affecting about 15% of the world population, 35% of woman and 43% of young children, it occurs when the body iron stores become depleted and a restricted supply of iron to various tissues become apparent. This may result in depletion of HB and iron-dependent intra-cellular enzymes participating in many metabolic pathways. Because there is the need for proper management of micro nutrient deficiencies most especially iron deficiency. The medicinal plant has enormous commercial potential throughout the globe. It is estimated that high quality phytomedicinal will provide Safe and effective medication in India, Ayurveda, siddha, Unani etc. Consist of large number of herbal remedies,. The medicinal plant has the potential to correct anaemia problems. There are so many plants like *Tridax procumbens*, *Selenicereus Jatropha tanjorensis, Helianthus annuus, Amaranthus spinosus* are used traditionally for the treatment of anaemia.

Keyword:- Anti-anaemia, Haemoglobin, *Tridax procumbens, Selenicereus undatus, Jatropha tanjorenesis, Helianthus annuus, Amaranthus spinosus,* Iron contents, Medicinal uses.

1) Introduction:-

- Anaemia is a most common form of mineral deficiency. In cause of which is iron deficiency
- According to the WHO, for under 5 yr children, the threshold HB level for being Anaemic is less than 11.0 g/dl
- Anaemia is a global public health problem which affect 1.62 billion(24.8%) people world-wide.
- Iron deficiency is the most common mineral deficiency and cause of anaemia.
- They may be teenage girl on set of menstruation cycle are iron mineral deficiency caused.
- Iron deficiency anaemia increases the risk of having infectious diseases, reduced physically ability, reduces concentration. And reduced learning ability.
- Iron deficiency is the most common single-nutrient deficiency disease in the world, affecting about 15% of the world population, 35% of women and 43% of young children.
- It occurs when the body's iron stores become depleted and a restricted supply of iron to various tissues becomes apparent.
- This may result in depletion of haemoglobin and iron-dependent intra-cellular enzymes participating in many metabolic pathways.
- Therefore, there is the need for proper management Anaemia is a common blood disorder that affects people of all ages, although the people at greater risk are the elderly, young women of child-bearing age and the infants.
- Anaemia medically stands for lowered haemoglobin level (normal for male: 13.5 - 17.0 gms % & for female: 12.0-15.5 gms %) either with normal or lowered red blood cells depending upon the age and sex.
- It occours it all stages of the life but it more small ages children(under 5 yr) are causes anaemia include folate, vit B12 deficiencies, malaria, intestinal Helminthes viral infections etc. there are 400 types of anaemia, but there are most commonly causes iron deficiency.
- In worldwide herbal boom, it is estimated that high quality Phyto-Medicinals will provide safe and effective medication. In India, Ayurveda, Siddha, Unani etc. consist of large number of herbal remedies, being used from ancient times and having their potential therapeutic claims.
- The medicinal plants have the potential to correct anaemia problems.
- The incidence of anaemia is higher in the world especially in the developing countries were due to the presence of many aggravating factors such as poor nutrition, high prevalence of blood parasites example, plasmodium, trypanosomes and helminths infestation.
- It is also known that women are susceptible to anaemia during pregnancy due to high demand from the developing foetus.

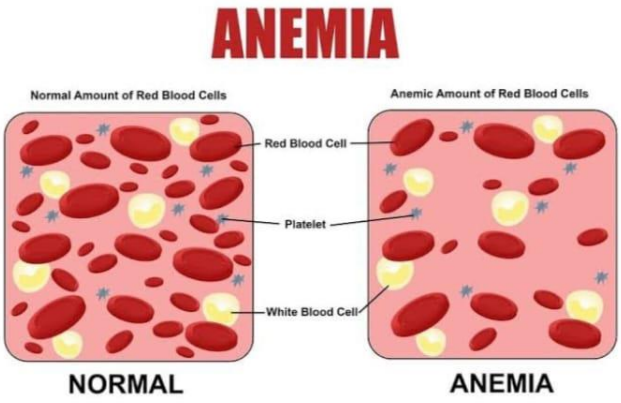


Fig.1:- Anaemia

2] Types Of Anaemia:-

A) Microcytic Anaemia:- Due to iron deficiency

- The product of red cells smaller than normal the small size of cell product of HB
- The small size of these cells is due to decreased production of haemoglobin.
- The causes of microcytic anaemia include,

a) iron deficiency.

b) anaemia of chronic diseases.

c) lead poisoning.

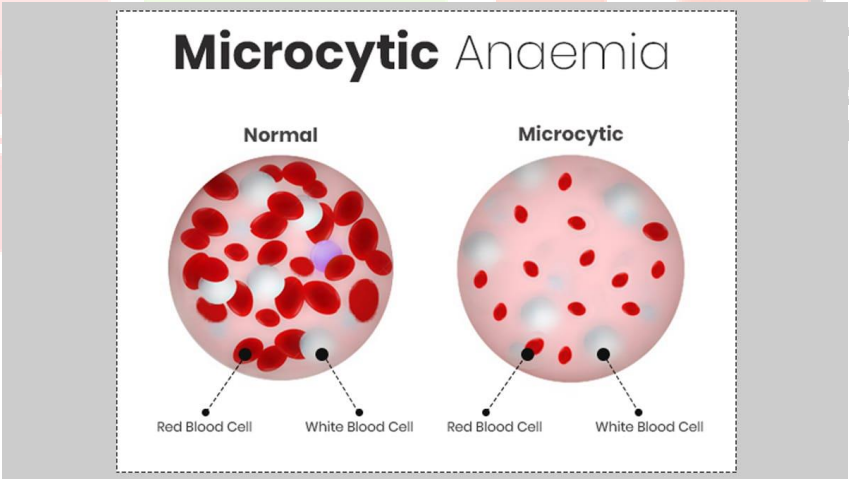


Fig.2:- Microcytic Anaemia

B) Megaloblastic Anaemia :-

- The most common causes of megaloblastic anaemia are folate & vitB12 deficiency.
- Megaloblastic anaemia results from impaired DNA synthesis resulting in large RBCs.
- The most common causes of megaloblastic anaemia are folate deficiency and Vit B12 deficiency.

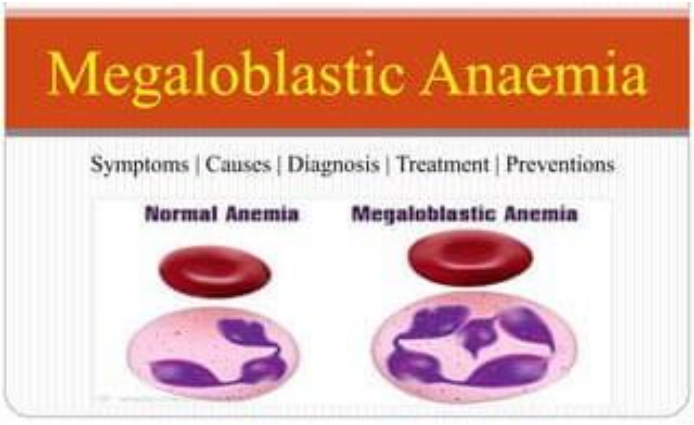


Fig.3:- Megaloblastic Anaemia

C) Hemolytic Anaemia:-

- Such as stickle cell dis which can be analyse by HB electro Spheresis.
- Haemolytic anaemia is a condition that causes red blood cells to be destroyed and removed from the blood too early.
- Red blood cells are responsible for carrying oxygen throughout the body.

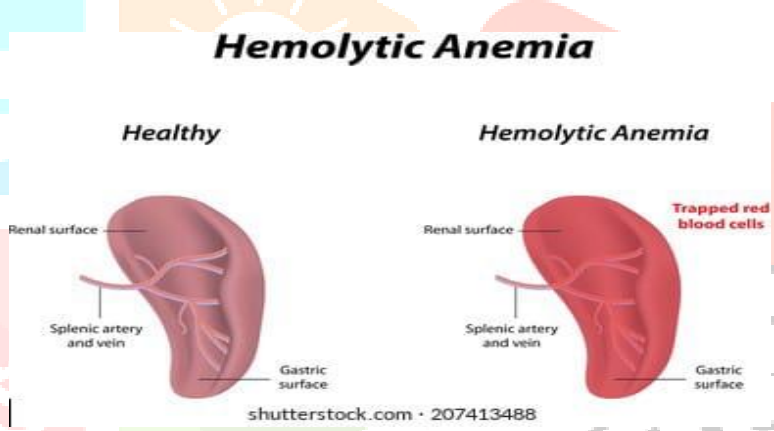


Fig.4:- Hemolytic Anaemia

D) Macrocytic Anaemia :-

- A blood disorder in which the body is not able to form enough blood cells because it lacks necessary nutrients.

e.g. :-Bone marrow, alcohol, liver diseases

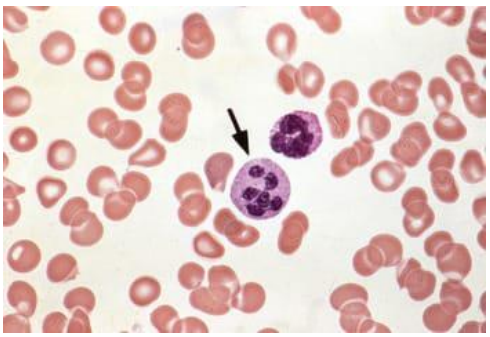


Fig.5:-Macrocytic Anaemia

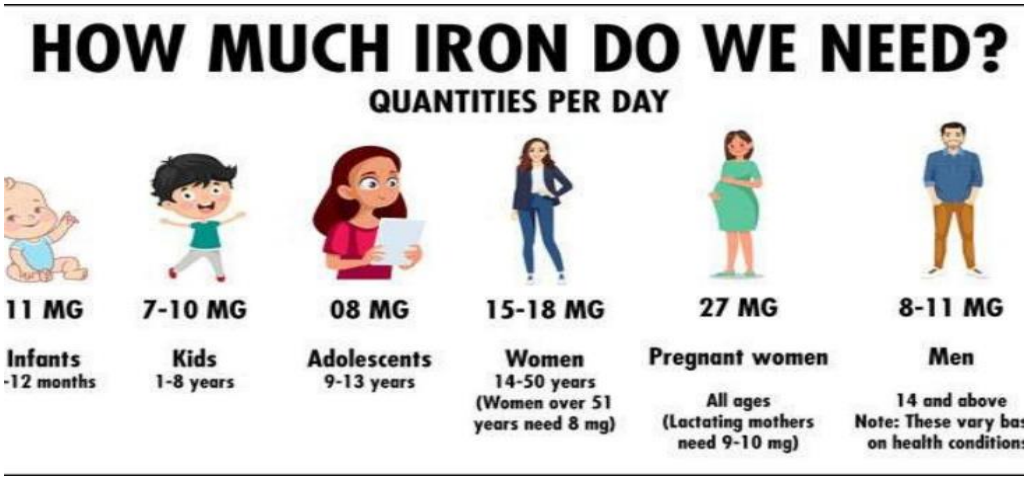


Fig.6:-Iron do you need

3) Objective:-

- **Increase red blood cell count**:-Boost the production of red blood cells to carry oxygen to tissues and organs.
- **Improve iron level**:-Address iron deficiency, a common cause of anaemia, by increasing iron absorption or supplementation.
- **Enhance haemoglobin level:-**Increase haemoglobin, the protein in red blood cells that carries oxygen.
- **Improve iron utilization:-**Enhance the body ability to utilize iron, reducing the risk of iron deficiency.
- **Support healthy bone marrow function**:-Enhance the function of bone marrow, responsible for producing red blood cells.

4) Causes and Symptoms of Anaemia.

- **Causes of Anaemia :-**

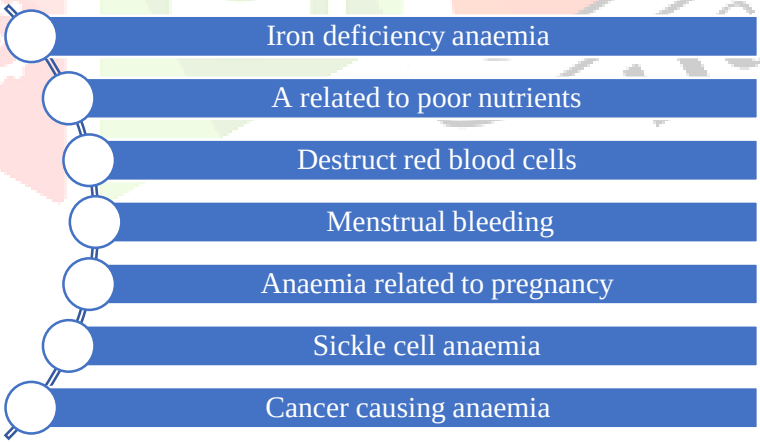


Fig.7 : Causes of Anaemia

- **Symptoms :-**

Fig.8 : symptoms of Anaemia

5) Mechanism:-

- The main mechanism contributing to anaemia and iron deficiency in cancer patients

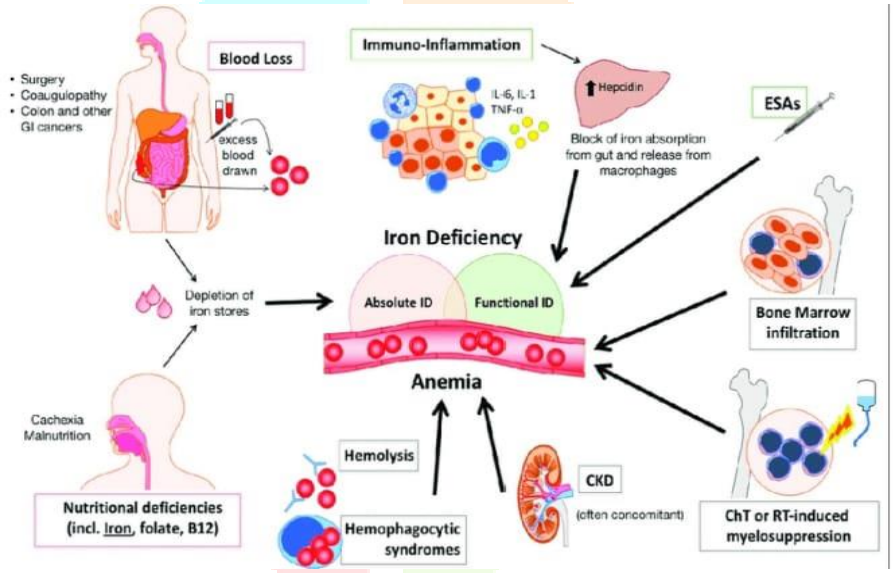


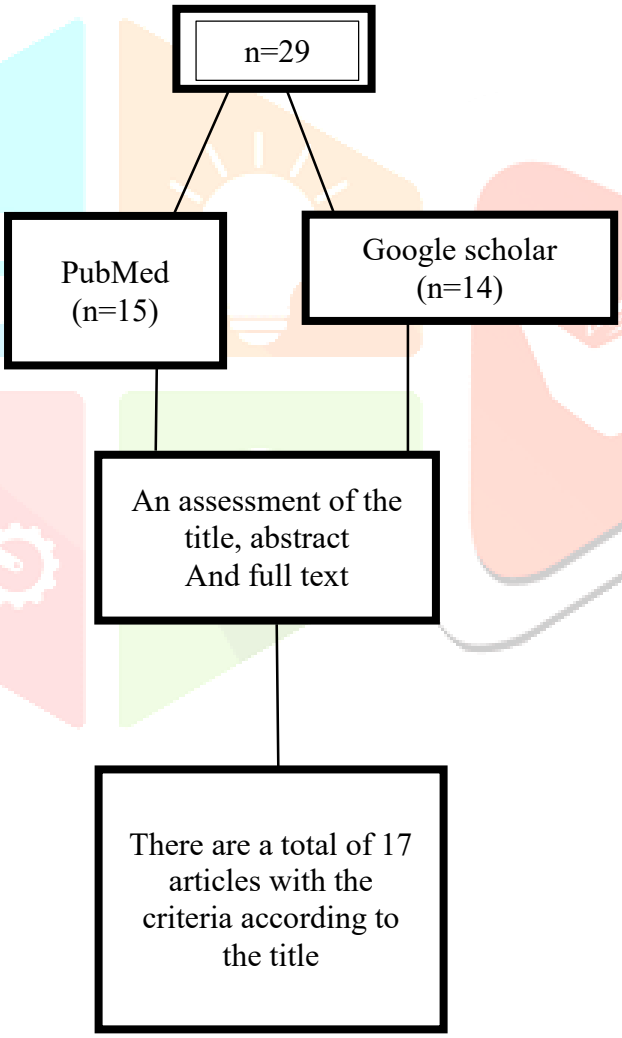
Fig.9 : Mechanism of Anaemia

- When the body doesn't have enough red blood cells or haemoglobin.
- Inflammation increases hepcidin synthesis in the liver, leading to functional iron deficiency.
- The iron need for erythropoiesis and iron supply from the stores.
- Then, other factors, such as, bone marrow, in filtration by tumour cells
- Myelosuppression caused by chemotherapy or radio therapy and concomitant chronic kidney disease, to the development to anaemia in cancer patients.
- Inflammation increases Hepidin synthesis in the liver,leading to functional iron deficiency.

- Treatment with erythropoiesis stimulating agents many contribute to functional iron deficiency a discrepancy between iron need for Erythroiesis and iron supply from the stores.

6) Methods:-

This research is a literature review with narrative methods that describe the results of research related to the potential of various plants to increase haemoglobin levels, the number of erythrocytes, and haematocrit percentage in people with anaemia through literature searches in the database PubMed and Google scholar . The initial stage of article search with the range of 2022-2013. The meaning of this review is to find out the potential antianemia of various. The libraries that have been obtained are then arranged by the framework, plant data with antianemia activities arranged in the form of tables, as well as writing reviews under the format that has been given.



7) Ayurvedic Approach:-

Caring for blood count is essential for life since whole life/health relies it. With clear-cut causes like accidental bleeding, heavy menstruation, pregnancy, poor nutrition, the person can be treated accordingly with the prescribed essential supplements in the form of foods/ tablets/ tonics/ injections and in case of critical condition blood transfusion may be must regular nutritious food to maintain blood counts/ haemoglobin is not acceptable. In general, 50% of anaemia patients can be cured with diet alone, 30% may need supplements and medicines and 20% may medicines. The treatment is the more effective the treatment. Ayurvedic medicines can boost the nutrition absorption, cells production, control the destruction and can maintain stable levels.

The medicinal plant has the potential to correct the anaemia problems there are so many plants like include the following.

1) Tridax Procumbens
2) Selenicereu Undatus
3) Jatropha Tanjorenesis
4) Helianthus Annuus
5) Amaranthus Spinosus

8) Plant Profile :-

Ayurvedic medicines commonly used to treat anaemia are:-

A) *Tridax Procumbens*:-

It is a widely spread hispid, procumbent herb, usually found as a weed. *Tridax procumbens* is perennial in nature with flowering-fruiting throughout the year the scientific name is '*Tridax procumbens'* the generic name is derived from the Greek, meaning summer eating , implying that it was a summer vegetable.

Tridax procumbens is commonly called as " Jayanti-Veda " in Sanskrit

Tikki-Kasa/ Ghamra in Hindi.

Wild daisy, Mexican daisy & coat buttons in English.

Based on the appearance of the flower.

Fig.10- *Tridax procumbens*

Name:-*Tridax procumbens.*

Common name:- Jayanti Veda.

Kingdom:- Plantae.

Family:-*Asteraceae.*

Class:–Magnoliopsida-Dicotyledons.

Sub-class:– Asteriidae.

Genus:- Tridax.

Species:-procumbens.

- **Chemical constituents:-**Alkaloids, glycosides, flavonoids, terpenoids, steroids, carotenoids, fatty acid, phenolic acid, saponins, tannis, minerals.
- **Iron contents:-**

Table 1:Tridax procumbens with their different parts and their iron contents

Sr. No.	Parts of plant	Iron contents
1	Pulp	0.65-1.2mg/100g
2	Seed	2.5-3.5mg/100g
3	Peel	1.1-2.1mg/100g
4	Juice	0.5-1.0mg/100g
5	Leaves	10-20mg/100g
6	Stem	5-10mg/100g
7	Roots	20-30mg/100g
8	Flowers	5-10mg/100g

- **Morphology:-** *Tridax procumbens* can be identified by its distinctive prostate growth habit, opposite leaves, 2-7 cm long 1-3 cm wide, and small white or yellowish flowers.

- **Mineral:-** iron, cropper, manganese, sodium, zinc.

- **Phytochemicals:-** alkaloids, steroids, carotenoids, flavonoids, saponins, tannis,

- **Medicinal properties:-**

- Anti-microbial & anti-fungal activities.
- Anti-inflammatory and anti-oxidant effects.
- Wound healing and anti-septic properties.
- Anti-diabetic, anti-cancer.
- Hepatoprotective and nephroprotective effects.
- Anti-tumour, anti-arthritic and anti-gout activity.

- Anti-histaminic and anti-allergic activity.

❖ **Medicinal Uses:-**

- **Digestive issues:-** *Tridax procumbens* is used as a drink to treat diarrhoea, dysentery, and bronchial catarrh.
- **Blood pressure:-** *Tridax procumbens* has medicinal properties against blood pressure.
- **Hair fall:-** *Tridax procumbens* has medicinal properties against hair fall.
- **Headache:-** *Tridax procumbens* has medicinal properties against headache.
- **Stomach ache:-** *Tridax procumbens* has medicinal properties against stomach ache.
- **Anticoagulant:-** *Tridax procumbens* has anticoagulant properties.
- **Anti-inflammatory:-** *Tridax procumbens* has anti-inflammatory properties.
- **Antimicrobial:-** *Tridax procumbens* has antimicrobial properties.
- **Insecticidal:-** *Tridax procumbens* has insecticidal properties.
- **Antiparasitic:-** *Tridax procumbens* has antiparasitic properties.
- **Antidiabetic:-** *Tridax procumbens* has antidiabetic properties

B) *Selenicereus Undatus*:-

Selenicereas undatus also known as dragon fruits. It is a topical. fruits cactus native to Mexico, central America & South America.

It is widely cultivated in South-East Asia, India, USA, The Caribbean Islands, Australia Throughout the tropical and sub-tropical world.

Selenicereus Undatus, the white-fleshed pitahaya, is a species of the genus *Selenicereus* in the family *Cactaceae* and is the most cultivated species in the genus. It is used both as an ornamental vine and as a fruit crop, the pitahaya or dragon fruit..

Fig. 11- *Selenicereus Undatus*

Name - *Selenicereus Undatus*

Kingdom - Plantae

Phylum– Tracheophyta

Class:-Magnoliopsida

Family- *Cactaceae*

Genus:- Selenicereus

Species:- Selenicereus *Undatus*

❖ **Chemical constituents:-**

β-Amyrin, γ-Sitosterol, octadecane, Heptacosane , Campesterol, Nanocosane, trichloroacetic acid, hexadecyl ester, betanin, phyllotactic, hylocerenin, pectin, triterpenoids.

❖ **Iron contents:-**

Table 2:Selenicerus undatus with their different parts and their iron contents

Sr. No.	Parts of plant	Iron content
1	Pulp	6.5-12 ppm
2	Seeds	25-35 ppm
3	Peel	11-21 ppm
4	Juice	0.5-1.0 mg/100ml
5	Leaves	10-20mg/100g
6	Stem	5-10mg/100g
7	Roots	20-30mg/100g
8	Flowers	5-10mg/100g

❖ **Morphology:-**

Plant type climbing epiphytic cactus.

Stem- segmented green , 3-10cm diameter.

Areoles- spiny, 2-5 cm part.

Spines- sharp, yellowish-brown, 1-3 cm diameter

Flowers- white, fragrant, nocturnal, 15-20 cm diameter.

Fruits- red or yellow, oval, 5-10cm long, 3-6 cm wide.

❖ **Minerals:-** iron, zinc, copper, manganese, selenium, vitamin C, calcium 10mg

❖ **Phytochemical:-** betacyanin, vitamin C, lycopene, polyphenols, flavonoids.

❖ **Medicinal properties:-**

- Antioxidant and anti-inflammatory effects
- Cardiovascular health support
- Anti-cancer properties
- Immune system support
- Digestive health benefits
- Anti-diabetic effects
- Neuroprotective effects

❖ **Medicinal Uses:-**

- **Antioxidants:-** Dragon fruit contains antioxidants that can help neutralize free radicals, which can damage cells and cause inflammation.
- **Digestion:-** Dragon fruit contains dietary fibre that can help promote healthy digestion and gut health.
- **Blood sugar:-** The fibre in dragon fruit can help people with type 2 diabetes feel fuller longer, lose weight, and normalize blood sugar levels.
- **Skin health:-** Dragon fruit's vitamin C content can aid in brighter skin. It can also treat sunburn, dry skin, and acne.
- **Eye health:-** Dragon fruit is rich in vitamin C, which can help nourish and protect the eye, specifically the cornea.
- **Cardiovascular health:-** Dragon fruit seeds contain antioxidants that may help improve cardiovascular health and reduce your risk of stroke and heart attack.
- **Immune system:-** Dragon fruit is rich in vitamin C, flavonoids, and antioxidants, which can help boost your immune system.
- **Inflammation:-** Dragon fruit's anti-inflammatory properties may help with pain and swelling.

C)*Jatropha Tanjorenesis*:-

Jatropha tanjorenesis also known as the catholic vegetable it is a leafy vegetable that widely grown in mid-western & southern Nigeria.

Jatropha Tanjorenesis, also known as the Catholic vegetable, is a leafy vegetable and medicinal plant that is native to West Africa.

A common weed of field crops and a gregarious shrub. It is usually grown in rain fall forest zones of west Africa.

Fig. 12- *Jatropha tanjorenesis*

Name - *Jatropha tanjorenesis*
Kingdom:-Plantae
Family:-*Euphorbiaceae*
Sub class:-Magnolibae
Class:-Equisetopsida
Genus:-Jatropha

❖ **Chemical constituent:-**

Alkaloids, flavonoids, tannis, cardiac, glycosides, anthraquinones, saponins, sapogenin, anthocyanin & phytate.

❖ **Morphology:-**

- Presence of visible lenticels on stems.
- Ovate lanceolate leaves with entire margins.
- Small, greenish, yellow flowers in axillary clusters.
- Capsular fruits with 3-carpellate gynoecium.

❖ **Mineral :-** phosphorus, selenium, zinc, iron, manganese, copper.

❖ **Phytochemicals:-** saponins, tannis, flavonoids, alkaloids, beta-carotene, lutein, quercetine.

❖ **Iron contents:-**

Table 3:Jatropha tanjorenesis with their different parts and their iron contents

Sr. No.	Parts of plants	Iron contents
1	Leaves	100-200 ppm
2	Stem	50-100 ppm
3	Roots	200-400 ppm
4	Seeds	300-400 ppm
5	Flowers	50-100 ppm
6	Latex	100-200 ppm

❖ **Medicinal properties :-**

- Anti-inflammatory and anti-arthritic effects.
- Antimicrobial and antifungal activities.
- Antioxidant and anti-cancer properties.
- Wound healing and antiseptic properties.
- Anti-diabetic and hypolipidemic activities.
- Hepatoprotective and nephroprotective effects.
- Anti-snake venom and anti-inflammatory activities.

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❖ **Medicinal Uses :-**

- **Gastrointestinal issues:-** The leaves are used internally for jaundice, stomach-ache, and cough. A decoction of the leaves is used as an antidiarrheal.
- **Antioxidant:-** The plant has antioxidant properties.
- **Hypoglycaemic:-** The plant has hypoglycaemic properties.
- **Antibacterial:-** The leaves have antibacterial activities.
- **Cardiovascular disease treatment:-** The plant may help treat cardiovascular disease.
- **Anti-inflammatory:-** The leaves have anti-inflammatory properties.
- **Other medicinal uses:-** The plant has been used to treat a variety of illnesses, including piles, cancer, leprosy, cuts and wounds, dermatitis, carbuncles, itches, measles, and scabie

D) *Helianthus Annuus*:-

The common sunflower (*Helianthus Annuus*) is a species of large annual for of the daisy. The common sunflower is harvested for its edible oily seeds.

The common sunflower is harvested for its edible oily seeds, which are often eaten as a snack food. They are also used in the production of cooking oil, as food for livestock, as bird food, and as a planting in domestic gardens for aesthetics. Wild plants are known for their multiple flower heads, whereas the domestic sunflower often possesses a single large flower head atop an unbranched stem.

Fig. 13 - *Helianthus Annuus*

Name - *Helianthus Annuus*

Kingdom – Plantae

Class – Magnoliopsida

Order – Asterales

Family *– Asteraceae*

Genus *– Helianthus*

Species *– Annus*.

- **Chemical constituents:-** Linoleic acid, oleic acid, flavonoids, phenolic acid, alkaloids, glycosides, saponins, lignans.
- **Iron contents:-**

Table 4 : Helianthus annuus with their different parts and their iron contents

Sr. No.	Parts of plants	Iron contents
1	Seeds	50-70 ppm
2	Leaves	20-40 ppm
3	Stem	10-30 ppm
4	Roots	30-60 ppm
5	Flowers	10-20 ppm
6	Oil	0.5-1.5 ppm

❖ **Morphology:-** the leaves are broad with serrated edges and are alternately arranged on the stem.

❖ **Mineral:-** calcium, copper, iron, magnesium, prosperous, potassium, selenium and zinc.

❖ **Phytochemical:-** alkaloids, carbohydrates, flavonoids, tannis, glycosides, saponins, steroids, tritoniids gum.

❖ **Medicinal properties:-**

- Anti-inflammatory
- Antimicrobial antibacterial and antifungal activity.
- Antioxidant
- Cardiovascular health
- Brain health
- Immune system support
- Fever treatment
- Sore treatment
- Cough and cold treatment
- Malaria treatment

❖ **Medicinal uses:-**

- **Food:-** Sunflower seeds can be eaten raw or roasted as a snack, or ground into sunflower butter, a peanut butter alternative. They are also a common ingredient in birdseed mixes.
- **Oil:-** Sunflower oil is used for cooking, in soap and paints, and as a lubricant. It can also be mixed with diesel to produce biofuel.
- **Ornamentals:-** Sunflowers are popular cut flowers that can be used to beautify your home.
- **Livestock feed:-** The leftover husks and meal from processing sunflower seeds into oil are used as animal feed.
- **Fuel:-** Sunflower stalks can be used as fuel.
- **Fiber:-** The stems of sunflowers can be used as a source of commercial fiber.
- **Phytoremediation:-** Sunflowers can be used to extract pollutants from soil such as lead, cadmium, zinc, caesium, strontium, and uranium.
- **Garden stakes:-** The thick stalks of sunflowers can be used as garden stakes.
- **Mulch:-** Chopped up sunflower plants can be spread around plants in the garden to help break down and improve the soil.
- **Dye:-** The flowers of sunflowers yield a yellow dye.

E) *Amaranthus spinosus* :-

Amaranthus spinosus commonly known as the spiny amaranth spiny pigweed, prickly amaranth. It is a plant that is native to the tropical Americas, but is present on most continents as an introduced species and sometimes a naxious weed It can be a serious weed of rice cultivation.

Fig.14:*Amaranthus spinosus*

Name:-*Amaranthus spinosus*

Kingdom:- Plantae

Phylum:- Tracheophyta

Class:- Magnoliopsida

Order:- Caryophyllales

***Family*:-** *Amaranthaceae*

Species:- Amaranthus spinosus

- **Chemical constituents:-** Albumin, Globulin, Alkaloid, Carbohydrate, Glycoside, Saponin.
- **Iron content:-**

Table 5: Amaranthus spinosus with their different parts and their iron contents

Sr. No.	Parts of plants	Iron contents
1	Leaves	20-40 ppm
2	Stem	10-30 ppm
3	Roots	30-60 ppm
4	Seeds	50-70 ppm
5	Flower	10-20 ppm

❖ **Morphology:-**

Annual herb, erect or sprawling growth habit

Stem- Green or reddish-green, 30-60cm tall,1-2cm diameter.

Leaves- simple, alternate, ovate lanceolate, 2-7cm long, 1-3 cm wide.

❖ **Minerals:-** calcium, iron, magnesium, potassium, zinc.

❖ **Phytochemical:-** alkaloids, carbohydrates, glycosides, saponins, phytosterols, proteins, amino acids, tannis.

❖ **Medicinal properties:-**

- Antioxidant activity
- Anti-inflammatory activity
- Antimicrobial activity
- Wound healing
- Anti-diabetic activity
- Anti-cancer activity
- Nutritional value
- Anti-arthritic activity
- Anti-snake venom activity
- Anti-ulcer activity

❖ **Medicinal uses :-**

- **Medicine:-** Used to treat a variety of , including snake bites, jaundice, and internal bleeding. It's also used as a laxative, diuretic, and antipyretic.
- **Food:-** The leaves can be cooked in a curry to treat kidney stones and pain while urinating.
- **Dye:-** Used for dyeing.
- **Superfood:-** Considered a superfood with many health benefits.
- **Snake bites:-** The juice from the plant can neutralize snake venom.
- **Jaundice:-** The leaves can be boiled without salt and consumed for a few days to treat jaundice.
- **Internal bleeding:-** Used internally to treat internal bleeding.
- **Excessive menstruation:-** The paste of the root can be taken to treat excessive menstruation.
- **Scorpion stings:-** The paste of the root can be applied to neutralize the poison from a scorpion sting.
- **Boils:-** The paste of the root can be applied to cure boils.
- **Muscle stiffness:-** The paste of the root can be applied to cure muscle stiffness

9) Discussion:-

In the world, there are 1.62 billion people affected by anaemia, of which there are 33% of schoolchildren, in men 40.2%, and in women 73.5%. The prevalence of anaemia according to WHO is still around 48.8% 23 the prevalence of school-age and adolescent anaemia is about 26.5%. where the proportion of anaemia is in the age group 15 - 24 years and 25 - 34 years 24. Herbal plants become an alternative option that can be chosen to overcome anaemia. Other characteristics of the children including sex, residency, feeding, parent education and family size have not been found to be different significantly between anaemic and non-anaemic groups. Similar results have been found in other studies. Many studies have been done to find out the active substances in a plant and prove anti-anaemia activities. Some of these plants are as follows.

1) *Tridax procumbens.*

2) *Selenicereus undatus.*

3) *Jatropha tanjorenesis.*

4) *Helianthus annuus.*

5) *Amaranthus spinous.*

10) Result And Conclusion:-

From the studied that has been described in the discussion can be concluded that many plants that have anti-anaemia activities include *Tridax procumbens, Selenicereus undatus, Jatropha tanjorensis, Helianthus annus, Amaranthus spinosus* which can increase haemoglobin levels . the number of erythrocytes and haematocrit presentation from various plants that are anti-anaemia it can be concluded that plants can increase haemoglobin levels, the number of erythrocytes, and a higher percentage of haematocrit compared to other plants. Also, anaemia treatment can also be done by various inductions such as Sodium Nitrite, Pheylhydriderazin,

Cyclophosphane, Anillin, Aluminium Sulphate.

Reference:-

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