Clinical Pharmacy II

Anemia Medications

Iron deficiency anaemia

Treatment with an iron preparation is justified only in the presence of a demonstrable iron-deficiency state. Prophylaxis with an iron preparation may be appropriate in some conditions (1).

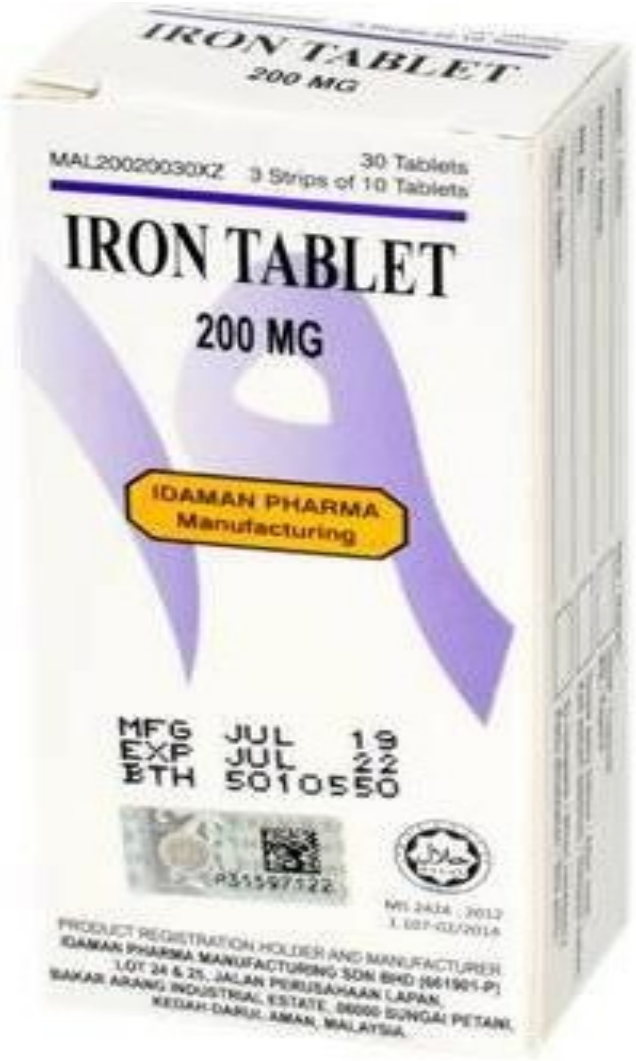
1-Oral iron

1.The oral dose of **elemental iron** for iron-deficiency anaemia should be 100 to 200 mg daily (1).

2.When the hemoglobin is in the normal range, treatment should be continued for a **further 3 months** **to replenish the iron stores** (1).


Ferrous Gluconate
Tablets
28 Tablets
300mg
Ferrous Gluconate 300mg
Tablets
For oral use
WARNING: CONTAINS IRON.
KEEP OUT OF THE SIGHT AND REACH OF CHILDREN, AS OVERDOSE MAY BE FATAL.
300mg
28 Tablets


Life
Ferrous Sulfate
60 mg elemental iron
300 mg
Helps form red blood cells and helps in their proper function
ACTUAL SIZE
100 TABLETS


IRON TABLET
200 MG
MAL20020030XZ
30 Tablets
3 Strips of 10 Tablets
IRON TABLET
200 MG
IDAMAN PHARMA
Manufacturing
MFG JUL 19
EXP JUL 22
BTH 5010550

4.Oral iron **preferably taken on an empty stomach** because food, especially dairy products, decreases the absorption by 40% to 50% (2). (However, many patients must take iron with food because they experience GI upset when iron is administered on an empty stomach) (3).

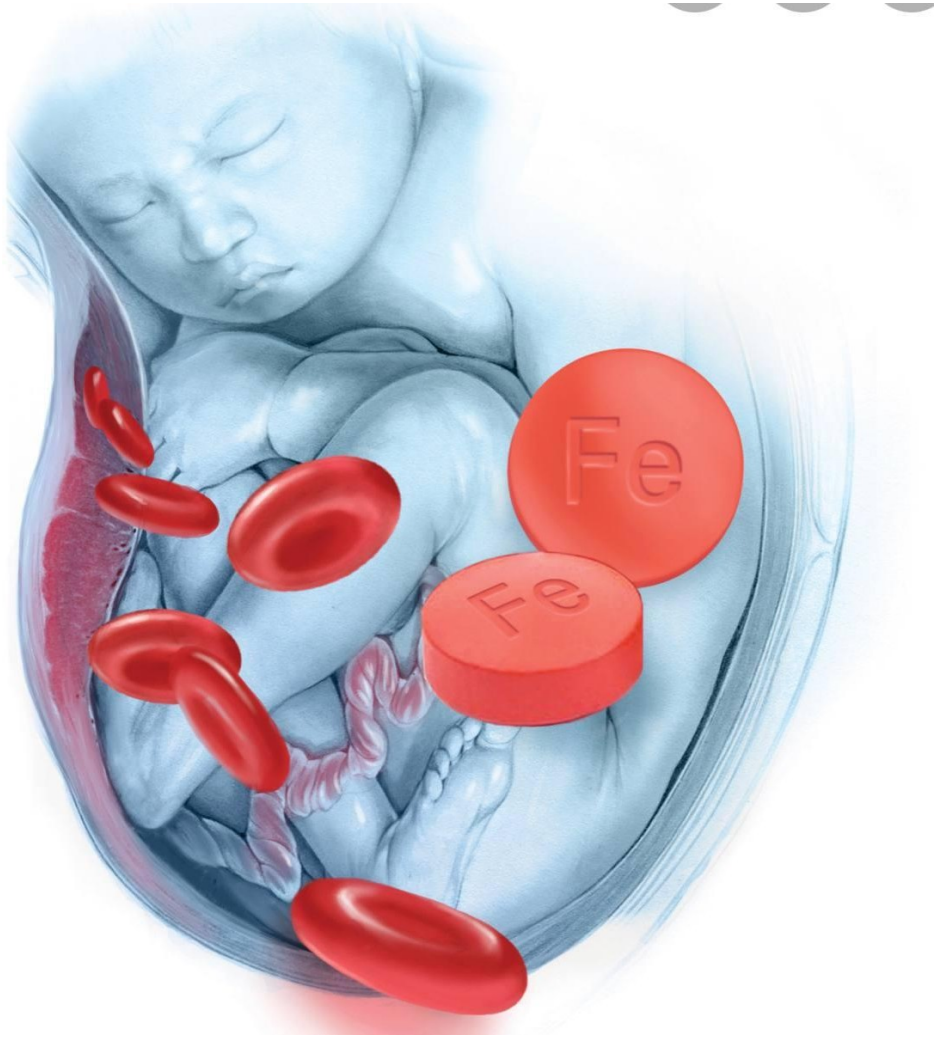
5.The patient should be told that **oral iron therapy produces dark stools** (2).
6-**Oral** iron preparations sometimes produces **gastrointestinal irritation** and abdominal pain with nausea and vomiting. **Adverse effects can be reduced by giving it with or after food** (rather than on an empty stomach) or by beginning therapy with a small dose and increasing gradually (4).

7-**Important**: **Oral Liquid preparations** containing iron salts should be well **diluted with water and swallowed through a straw to prevent discoloration of the teeth** (4).

1.Iron should be **stored in a safe place, inaccessible to young children.** Accidental ingestion of even small amounts (three to four tablets) of oral iron can cause serious consequences in small children

10.Some oral preparations contain **ascorbic acid** to aid absorption of the iron but the therapeutic advantage of such preparations is minimal

11-Preparations containing **iron and folic acid are used during pregnancy** in women who are at high risk of developing iron and folic acid deficiency.



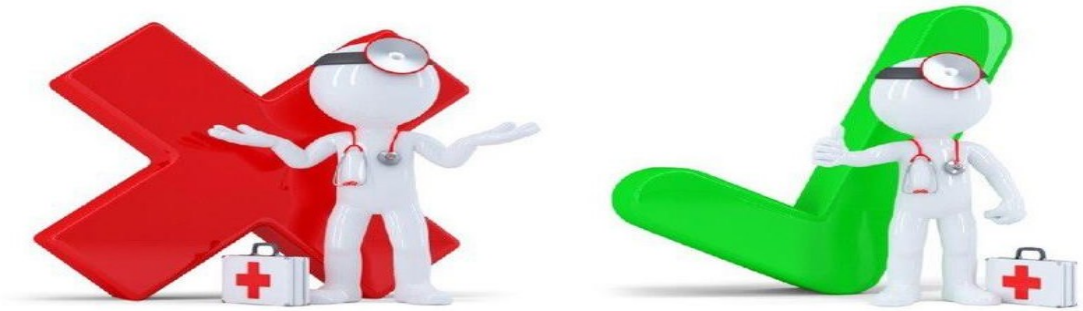
2-Parenteral iron

1.Parenteral iron (e.g. iron dextran, iron sucrose) is generally reserved for use **when oral therapy is unsuccessful** because the patient cannot tolerate oral iron, or does not take it reliably, or if there is continuing blood loss, or in malabsorption (1).

2.Parenteral iron may also have a role in the management of **chemotherapy**-induced anaemia. Many patients with **chronic renal failure** who are receiving hemodialysis also require parenteral iron

3.Depending on the preparation used, parenteral iron is given as **a total dose** or in **divided doses** (1).

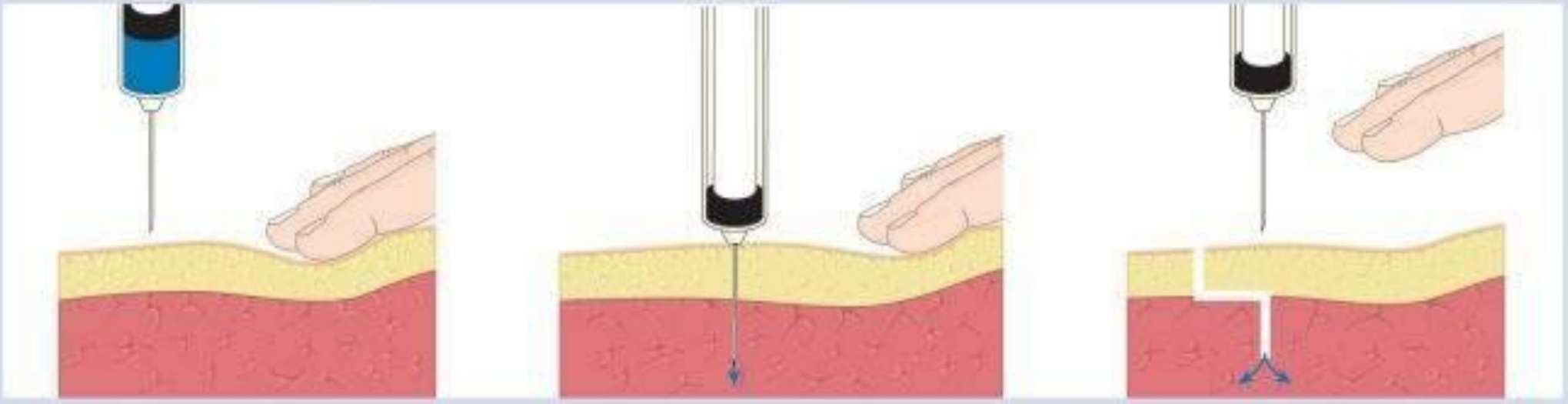
4.With the exception of patients with severe renal failure receiving haemodialysis, **parenteral iron does not produce a faster hemoglobin response than oral iron** provided that the oral iron preparation is taken reliably and is absorbed adequately .



5.Anaphylactoid reactions occur in less than 1% of patients treated with parenteral iron therapy and are more **commonly associated with iron dextran than with iron sucrose** . If an anaphylactic – like reaction occurs, it generally responds to i.v epinephrine, diphenhydramine, and corticosteroids

6-In **Iraq, iron dextran is given most commonly by IM route**. In these cases, undiluted drug should be **administered using a Z-track technique to avoid staining the skin**. (The skin should be pulled laterally before injection; then the drug is injected and the skin is released to avoid leakage of dextran into the subcutaneous tissue)

Fig 2. **Z-track technique**



2a. Pull the skin by about 2.5-3.75cm (Malkin, 2008) to displace the underlying tissue

2b. While holding the skin, adminster the injection

2c. Allow the skin to return to its normal position, trapping the drug in the muscle

7-Test dose for **iron dextran**: the recommendation is differs between UK and USA:

A-**USA**: Because of the potential for anaphylaxis with **iron dextran**, an IM or IV test dose should be given. The test dose for adults is 25 mg of iron dextran. A period of 1 hour or longer should elapse before the remaining portion of the initial dose be given.

B-**UK**: **Test doses are no longer recommended** and caution is needed with every dose of intravenous iron

3-Epoetins

1.Epoetins (recombinant human erythropoietins) are used to treat the anaemia associated with erythropoietin deficiency in **chronic renal failure**, and to shorten the period of symptomatic anaemia in patients receiving **cytotoxic chemotherapy** (1).

2.Darbepoetin alfa is a derivative of epoetin; it has a **longer half-life** and can be administered less frequently than epoetin (1).

3-Methoxy polyethylene glycol-epoetin beta is a continuous erythropoietin receptor activator that is licensed for the treatment of symptomatic anaemia associated with chronic kidney disease. It has a longer duration of action than epoetin

4-Important:

A-**Overcorrection of hemoglobin** concentration in patients with chronic kidney disease may increase the risk of death and **serious cardiovascular events**, and in patients with cancer may increase the risk of thrombosis and related complications .

B-The hemoglobin concentration should be maintained within the range **10–12 g/100mL .**

Sickle-cell anaemia

Hydroxycarbamide (**Hydroxyurea**) can reduce the frequency of crises and the need for blood transfusions in **sickle-cell disease .**

Glucose 6-phosphate dehydrogenase (G6PD) deficiency

1-Individuals with G6PD deficiency are susceptible to **developing acute hemolytic anaemia when they take a number of common drugs**

Table 9-2: Drugs with definite and possible risk of hemolysis in some G6PD-deficient individuals [1].

Drugs with definite risk of hemolysis in most G6PD-deficient individuals	**Drugs with possible risk of hemolysis in some G6PD-deficient individuals**
. **Dapsone** and other sulfones (higher doses for dermatitis herpetiformis more likely to cause problems) . Methylthioninium chloride . Niridazole . **Nitrofurantoin** . Pamaquin . Primaquine (30 mg weekly for 8 weeks has been found to be without undue harmful effects in African and Asian people) . **Quinolones** (including **ciprofloxacin**, **moxifloxacin**, **nalidixic** acid, **norfloxacin**, and **ofloxacin**). . Rasburicase . **Sulfonamides** (including **co-trimoxazole**; some sulfonamides, e.g. sulfadiazine, have been tested and found not to be hemolytic in many G6PD-deficient individuals)	. **Aspirin** (acceptable up to a dose of at least 1 g daily in most G6PD-deficient individuals) . **Chloroquine** (acceptable in acute malaria and malaria chemoprophylaxis) . Menadione, water-soluble derivatives (e.g. menadiol sodium phosphate) . Quinidine (acceptable in acute malaria) . Quinine (acceptable in acute malaria) . **Sulfonylureas**

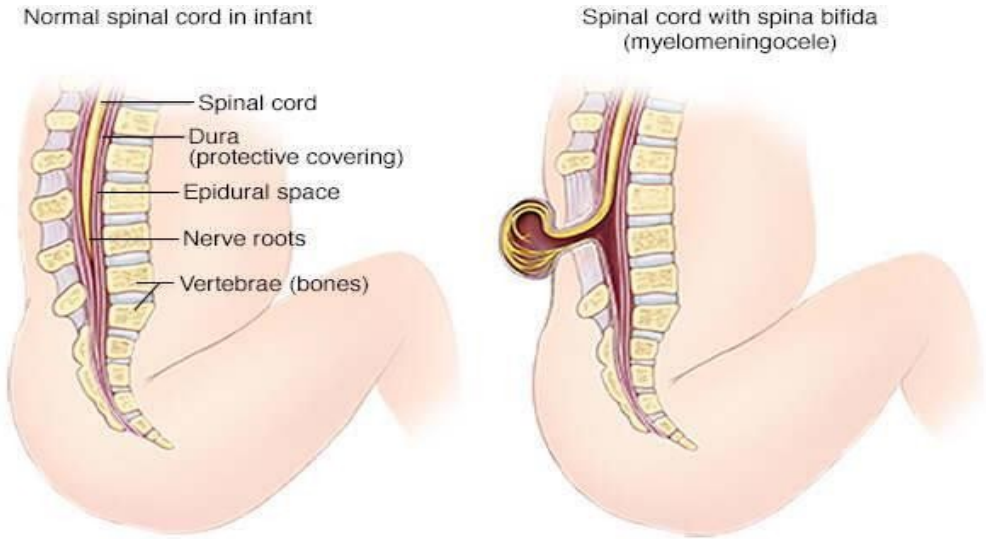
Megaloblastic anaemia

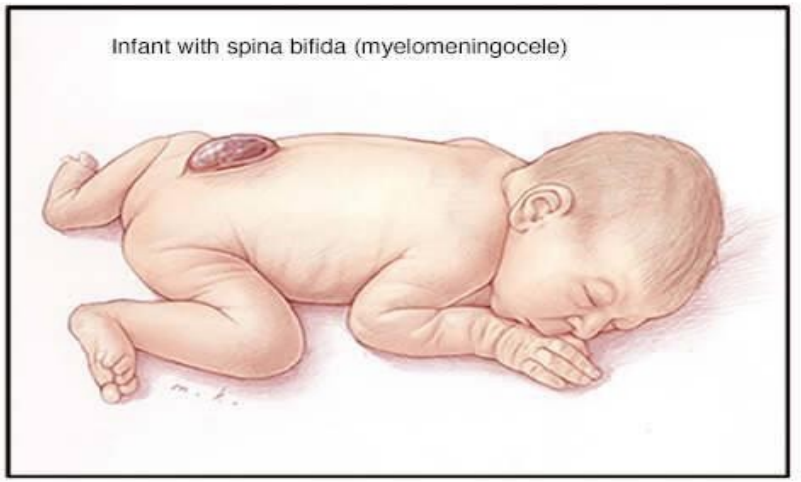
Most megaloblastic anaemias result from a lack of either **vitamin B12** or **folate** and treated accordingly .

4-Folic acid

1-Prevention of neural tube defects (NTD):

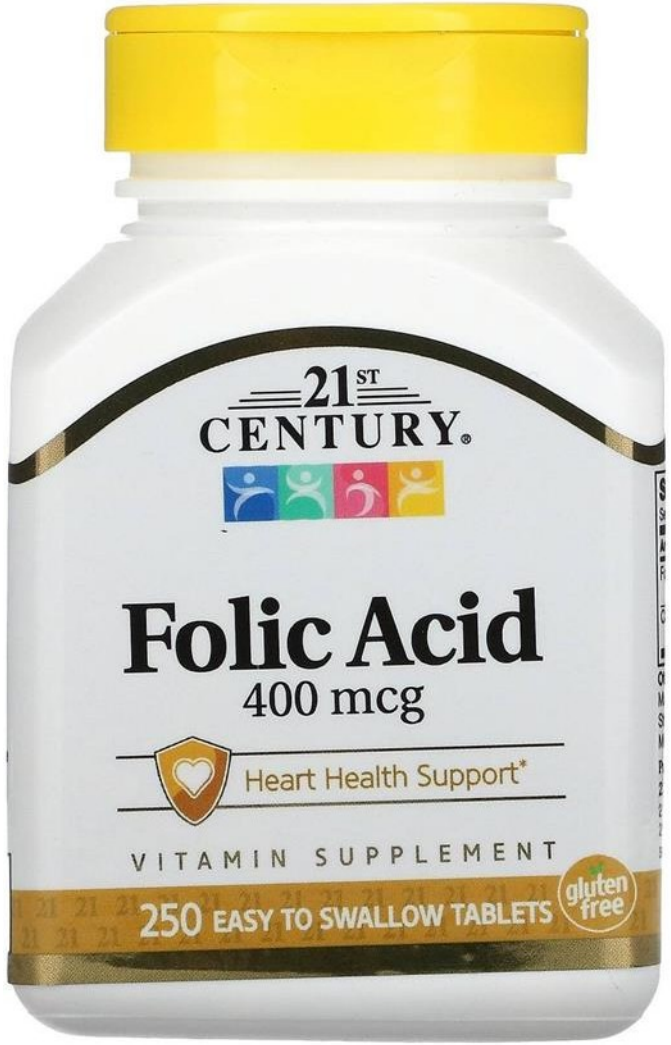
A-Folic acid supplements taken before and during pregnancy can **reduce the occurrence of neural tube defects**





B-For women of child-bearing potential at **high risk of having a pregnancy affected by NTD** (e.g. if they have had a previous pregnancy affected by a neural tube defect), **the dose of folic acid is 4 or 5 mg daily** starting before pregnancy (in the USA the recommendation is 4 weeks before) and continued through the first trimester (until week 12 of pregnancy) .

C-**For women at a low risk of having a child with a NTD** the dose **is 400 micrograms** daily and continued through the first trimester (until week 12 of pregnancy)


21ST CENTURY
Folic Acid
400 mcg
Heart Health Support*
VITAMIN SUPPLEMENT
250 EASY TO SWALLOW TABLETS
gluten free


actavis
Folic Acid
Tablets
5 mg
28 tablets
For oral use
esurgery

2-Other indications for folic acid include :

A-Folate-deficient **megaloblastic anaemia**.

B-Prevention of **methotrexate- induced side-effects** (dose to be taken on a different day to methotrexate dose).

C-Prophylaxis of **folate deficiency in dialysis.**

-Iron overload

1-Deferasirox and Deferiprone are oral iron chelators, while desferrioxamine is an iron chelator **parenterally** (i.v or s.c). They promote Iron excretion and indicated for conditions associated with iron overload .

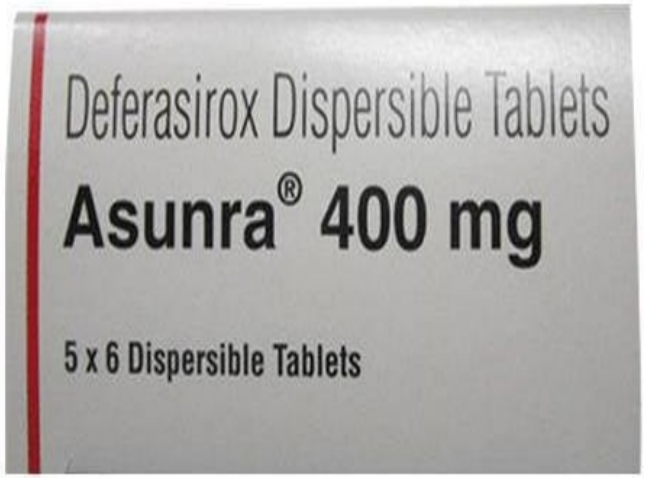

Demoferidon
Deferoxamine mesilate 500 mg
Rx Prescription Drug
Box of 10 vials
Powder for Solution for Injection or Infusion.
Intramuscularly, intravenously, subcutaneously, or intraperitoneally
DEMO S.A.
PHARMACEUTICAL INDUSTRY
DEMO S.A.

2-Iron excretion induced by desferrioxamine is enhanced by administration of ascorbic acid (**vitamin C**) daily by mouth; it should be given separately from food since it also enhances iron absorption .

3-Desferrioxamine is also indicated for **iron poisoning .**

4-Adminstartion of Deferasirox:

A-For dispersible tablets, manufacturer advises tablets should be dispersed in 100–200mL of water, orange juice, or apple juice; if necessary any residue should be resuspended in a small volume of water or juice then administered; do not chew or swallow whole .




Thank
You!