

## **NEW GENERATION**

### ***Iron Supplement***

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To this day, iron deficiency anaemia still represents a major medical issue. Long lasting negative iron balance leads to iron deficiency, depletion of iron storage, ineffective erythropoiesis, and finally (if iron deficiency is not corrected in the first two stages), development of clinical presentation of sideropenic anaemia. The aim of modern treatment strategy is early discovery of iron deficiency through laboratory testing of iron status and prompt administration of therapy. Therapy of iron deficiency caused anaemia aims to achieve quick increase of the concentration of blood haemoglobin and repletion of iron storage, which may take 3 to 12 months.

Daily iron needs are 1- 4 mg and are dependent on sex, age and physiological state. Daily iron intake with food through meat, cereals and vegetables is about 10-20 mg of which 2-20% is absorbed. This variable quantity of absorbed iron is related to the source of iron in food (it is higher in animal source foods and lower in vegetable source foods), however it also includes other foods.

The quantity of iron in the organism is primarily controlled by the regulation of absorption process in the duodenum. Mechanisms of iron transport in enterocytes are different for heme iron and non-heme iron, whereas absorption is regulated with a physiological mechanism and local factors in the digestive system. Local factors are the most important for the conditions of intestinal resection, atrophic gastritis, chronic inflammation, malabsorption and other pathological conditions.

#### **Oral Iron Preparations**

Most oral iron preparations contain iron in its inorganic, ferrous form, since it is absorbed from the digestive system three times more than the ferric form. The most frequently used preparations are ferrous sulphate, ferrous fumarate, ferrous succinate and ferrous gluconate. These various ferrous salts are not significantly different with respect to bioavailability of the Fe preparation and the rate of correction of anaemia, however, they are different in terms of gastric tolerance to the preparation. Polysaccharide iron complexes with approximately same absorption are also used.

Newer generation oral preparations contain heme iron polypeptides (HIP) where the heme porphyrin ring is used for iron absorption in the intestine. Such formulation of an iron preparation represents a new strategy in iron therapy since heme iron ensures much better absorption without undesirable gastrointestinal complaints resulting from the remaining unabsorbed inorganic iron.

#### **Undesirable Reactions to Oral Iron Preparations**

Free elemental iron belongs to the group of heavy metals and has an irritant effect on the GIT's mucous membrane. The most frequent undesirable reactions of the gastrointestinal tract to iron preparations are nausea, burning pain in the stomach, pains, obstipation and diarrhoea.

Such effect is directly proportionate to the quantity of free elemental iron released from the preparation in the GIT. Obstipation and diarrhoea are most often secondary results of the effect of Fe on intestinal mucous membrane and are not dose dependent.

#### **GlobiFer plus and GlobiFer forte**

GlobiFer plus and GlobiFer forte are a new generation of oral iron preparations containing heme iron polypeptides in the form of haemoglobin powder from animals, enriched with ferrous sulphate. Such composition is a unique, innovative formulation, which is a combination of heme and inorganic iron. This enables maximum iron absorption through activation of both absorption mechanisms (heme and non-heme Fe) and the presence of heme iron facilitates absorption of inorganic Fe. The ratio between heme and non-heme Fe in GlobiFer forte is 8:1, which corresponds to iron intake through food. A tablet of GlobiFer forte contains 18 mg of elemental Fe and it is recommended in such cases when it is necessary to quickly increase concentrations of haemoglobin: in acute iron deficit, in preparation for surgery, in iron deficiency anaemia.

GlobiFer plus contains 9 mg of heme iron and 9 mg of iron fumarate, and folic acid. It is intended for conditions of increased need for iron and for maintaining achieved haemoglobin concentrations: in

pregnant women and women in their reproductive period, in young people in their development and growth stage, in athletes. GlobiFer forte and GlobiFer plus have shown minimum undesirable reactions, which is enabled by the improved production technology.

**New Possibilities of Administration of GlobiFer forte**

Parenteral administration of iron preparations in more developed countries has reduced the need for using blood products. In terms of the rate of anaemia correction, parenteral administration of Fe has no significant advantages when compared to oral use, and therefore, an oral heme iron preparation could provide the same effect. The most frequent reasons for parenteral administration of Fe are: malabsorption, severe intolerance to oral Fe preparations, patients receiving parenteral nutrition and dialysis, fast correction of anaemia (before surgery, caesarean section, cardiac surgery). Due to high concentration and bioavailability of heme iron, in some groups of patients, GlobiFer forte could achieve the effect similar to intravenous iron.