

Complementary and alternative medicine iron preparations: A cost-effective, rationale and accessible solution for public health problems

Sir,

Article by Syed Sadat Ali entitled "A brief review of risk-factors for growth and developmental delay among preschool children in developing countries" has highlighted the prevalence of nutritional deficiencies in developing countries such as India.^[1] Iron deficiency anaemia among them is the most prevalent deficiency leading to several negative effects on important functions of the body. Infants and small children are particularly vulnerable as it is associated with impaired performance of mental and physical coordination, activity and brain development which cannot be reversed by giving iron later on. The long standing iron deficiency has led to a reduction of physical work capacity leading to important health and socio-economic consequences in larger population.

Iron supplementation, iron fortification of certain foods and nutrition education to improve the amount of iron absorbed from the diet by increasing the intake of iron to improve the bioavailability of the dietary iron is well prescribed solution. However the bioavailability of iron in the diet is limited due to mucosal block of ferrous form of iron and compliance due to undesirable metallic taste, gastrointestinal problems and cost of the therapy. Conversely avoiding the occurrence of metallic taste would require lowering of the content of iron in the supplements, which would render the supplement ineffective.^[2]

The complementary and alternative medicine (CAM) iron preparations are cost-effective as they contain the ferric as well as ferrous form. Out of the total iron content more than 80% are in the form of ferric oxide and ferrous oxide. The iron in these preparations undergoes seven to nine times of ignition in earthen pots and thus contains more oxides than other preparations of iron.^[3] The iron present in these preparations is neither the iron salts nor contains any organic matter in them.

Allopathic preparations contain iron in the ferrous form while alternative system of medicine (Unani

and Ayurvedic) prescribes iron preparations where iron is dominant in ferric form. The concept of iron absorption in the former case is based on the mucosal block hypothesis where iron is supposed to get absorbed in the ferrous form while the later preparations are based on the chelation hypothesis where either forms of iron gets absorbed passively through the intestine after forming molecular complexes with the chaperone proteins such as β_3 -integrin and mobilferrin.^[4]

Many of the studies have supported the fact that alternate transport mechanisms exist in the enterocyte to absorb the iron in the enterocytes. One of such transcytosis involves large molecular weight complexes with the ferric form of iron that is known as paraferitin and helps vectorial transport of iron from the apical membrane to the basolateral membrane of the enterocytes. This is necessary as the free iron whether ferrous or ferric form is reactive and insoluble and leads to the generation of the reactive oxygen species via Haber-Weiss reaction in the cell.^[5] In addition to that iron preparation of alternative system of medicine also lacks the gastrointestinal irritable side-effects. Thus, CAM supplements are scientifically more rationale, cheaper and having wider cultural acceptability in the society.

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