

DRUG PROFILE

ORAL IRON PREPARATIONS FOR NEONATES AND CHILDREN

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Abstract: *Iron deficiency anemia (IDA) is one of the most common public health concerns globally, more so in developing countries like India. Iron deficiency in pregnancy, infancy and early childhood results in health and neurodevelopmental problems in the first 1000 days of life. Oral iron supplementation is preferred for prevention and treatment of iron deficiency anemia. This article is a review of the various oral iron preparations available in the market.*

Keywords: *Iron deficiency, Anemia, Children, Ferrous, Ferric.*

Points to Remember

- *Iron deficiency anemia is extremely common in children and is of great public health importance.*
- *Prevention, early identification and treatment of iron deficiency is essential for normal neurodevelopment.*
- *Ferrous formulations are preferred for oral iron supplementation.*
- *Prudent selection of appropriate formulation and awareness of elemental iron provided in each, help to ensure correct dosing.*

References

1. Kotecha PV. Nutritional anemia in young children with focus on Asia and India. *Indian J Community Med* 2011; 36(1):8-16. doi:10.4103/0970-0218.80786.
2. DeMayer EM, Dallmen P, Gurney JM, Hallberg L, Sood SK, Srikantia SG. Prevention of iron deficiency anaemia. In: *Preventing and Controlling Iron Deficiency Anaemia through Primary Health Care*. Geneva, World Health Organisation 1989;pp 34-42.
3. WHO, UNICEF, UNU. *Iron deficiency anaemia: assessment, prevention and control, a guide for programme managers*. Geneva, World Health Organization, 2001. Available at http://www.who.int/nutrition/publications/micronutrients/anaemia_iron_deficiency/WHO_NHD_01.3/en/index.html. Accessed on 7 November, 2020.
4. Nagpal J, Choudhury P. Iron Formulations in Pediatric Practice. *Indian Pediatr*. 2004; 41 (8): 807-815
5. Aggett PJ. Iron. In: Erdman JW, Macdonald IA, Zeisel SH, eds. *Present Knowledge in Nutrition*. 10th edn. Washington, DC: Wiley-Blackwell; 2012;pp506-520.
6. Institute of Medicine. Food and Nutrition Board. *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium and Zinc: A report of the Panel on Micronutrients*. Washington, DC: National Academy Press; 2001.
7. Baker RD, Greer FR. Diagnosis and prevention of iron deficiency and iron-deficiency anemia in infants and young children (0-3 years of age). *Pediatrics* 2010; 126:1040-1050.
8. Hurrell R, Egli I. Iron bioavailability and dietary reference values. *Am J Clin Nutr* 2010; 91:1461S-1467S.

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9. National Institute of Nutrition. Dietary Guidelines for Indians - A Manual. Available from nin.res.in/downloads/Dietary Guidelines for NIN website. Accessed on 12 November, 2020.
10. Kaushansky K, Kipps TJ. Hematopoietic agents. In: Brunton LL, Lazo JS, Parker KL, editors. Goodman and Gilman's The pharmacological basis of therapeutics. 11th edn. New York: McGraw-Hill; 2006; pp1433-88
11. Karelia BN, Buch JG. Analysis of hematinic formulations available in the Indian market. *J Pharmacol Pharmacother*. 2012; 3(1):35-38. doi:10.4103/0976-500X.92504.
12. Shah A. Iron deficiency anemia-Part III. *Indian J Med Sci*. 2004; 58(5):214-216.
13. Rimon E, Kagansky N, Kagansky M, Mechnick L, Mashiah T, Namir M, et al. Are we giving too much iron? Low-dose iron therapy is effective in octogenarians. *Am J Med* 2005; 118:1142-1147.
14. Joint Formulary Committee. British National Formulary for children. London: BMJ Group and Pharmaceutical press, 2013-2014; pp443-446
15. Hallberg L, Ryttinger L, Solvell L. Side Effects of oral iron therapy. A double blind study of different iron compounds in tablet form. *Acta Med Scand Suppl* 1966; 459: 3-10.
16. Andrews NC. Disorders of Iron Metabolism and Sideroblastic Anemia. In: Nathan DG, Ginsburg D, Orkin SH, Look AT. Nathan and Oski's Hematology of Infancy and Childhood. Philadelphia: WB Saunders; 2003; pp 455-497.
17. Santiago P. Ferrous versus Ferric Oral Iron Formulations for the Treatment of Iron Deficiency: A Clinical Overview. *Scientific World Journal* 2012; 846824. doi: 10.1100/2012/846824.
18. Fidler MC, Walczyk T, Davidsson L, Zeder C, Sakaguchi N, Juneja LR, et al. A micronised, dispersible ferric pyrophosphate with high relative bioavailability in man. *Br J Nutr* 2004; 91(1):107-112. [PubMed:1474 8943]
19. Hussain U, Zia K, Iqbal R, Saeed M, Ashraf N. Efficacy of a Novel Food Supplement (Ferfer®) Containing Microencapsulated Iron in Liposomal Form in Female Iron Deficiency Anemia. *Cureus* 2019, 11(5): e4603. DOI: 10.7759/cureus.4603
20. Brillì E, Romano A, Fabiano A, Zambito Y, Di Raimondo F, Tarantino G. Sucrosomial technology is able to promote ferric iron absorption: pre-clinical and clinical evidences. *Blood* 2016;128(22):3618.
21. Pineda O, Ashmead HD. Effectiveness of treatment of iron-deficiency anemia in infants and young children with ferrous bis-glycinate chelate. *Nutrition* 2001; 17: 381-384.
22. Borbolla JR, Cicero RE, Dibildox MM, Sotres DR, Gutierrez RG. Iron polymaltose complex vs. iron sulphate in the treatment of iron deficiency in infants. *Rev Mex Pediatr* 2000; 67: 63-67.
23. Mehta BC. Ineffectiveness of iron polymaltose in treatment of iron deficiency anemia. *J Assoc Physicians India* 2003; 51: 419-421.
24. Nielsen P, Gubbe EE, Fischer R, Heinrich HC. Bioavailability of iron from ferric polymaltose in humans. *Drug Research* 1994; 44: 743-748.
25. Department of Health and Human Sciences Food and Drug Administration. Iron-containing supplements and drugs: label warning statements and unit-dose packing requirements. Final rule. Federal Register 21CFR parts 101,111 and 310., 1997; 62(10):p2218.
26. Gordeuk VR, Brittenham GM, McLaren CE, Hughes MA, Keating LJ. Carbonyl iron therapy for iron deficiency anemia. *Blood* 1996; 67 (3): 745-752.
27. Choudhury P. Iron deficiency anemia. In: Lokeshwar MR, Shah NK, Agarwal B, Sachdev A, editors. IAP Speciality Series on Pediatric Hematology and Oncology. Mumbai: Indian Academy of Pediatrics, 2006; pp 28-35.
28. Andrews NC. Disorders of Iron Metabolism and Sideroblastic Anemia. In: Nathan DG, Ginsburg D, Orkin SH, Look AT. Nathan and Oski's Hematology of Infancy and Childhood. Philadelphia: WB Saunders; 2003; pp 455-497.
29. Wang M. Iron Deficiency and Other Types of Anemia in Infants and Children. *Am Fam Physician* 2016; 93(4):270-278.
30. Karelia BN, Buch JG. Analysis of hematinic formulations available in the Indian market. *J Pharmacol Pharmacother* 2012; 3(1):35-38.