Cooking in iron utensils increases iron contents and bioavailability in leafy vegetables

Inadequate dietary intake and poor bioavailability of iron from food are considered as prime etiological factors of anaemia. Research has suggested that bioavailability of iron from food systems is an outcome/resultant of the interaction of its components. Of the dietary components, oxalates, tannins and phytates are known to inhibit iron absorption whereas organic acids, such as ascorbic acid, citric acid, malic acid and lactic acid are known to enhance the absorption of iron. Green leafy vegetables are good sources of iron, providing around 5-10mg per 100g on an average. A daily intake of 100g of greens is recommended in an adult’s diet. However, bioavailability of iron in greens may depend upon ascorbic acid content, which is a promoter and dietary fibre, oxalates and tannins, which are inhibitors of iron absorption. Greens are generally low-cost and cooking in iron pots could be an effective strategy to increase iron intake.

The effects of cooking utensils on the total and bioavailable iron contents of five green leafy vegetables [Amaranth (Amaranthus gangeticus Linn.), Kilkeerai (Amaranthus tricolor Linn.), Shepu (Peucedanum graveolens Linn.), Fenugreek (Trigonella foenum-graecum Linn.) and Chakotha (Chenopodium album Linn.)], along with related promoters and inhibitors, were investigated by scientists working at Department of Studies in Food Science and Nutrition, University of Mysore, Manasagangotri, Mysore. The cooked and fresh greens were analysed for moisture, total and bioavailable iron, ascorbic acid, dietary fibre, tannins, total oxalates and soluble oxalates by standard techniques. Moisture content of fresh greens ranged from 80-90%, total dietary fibre (5-11g/100g), oxalates (0.022-1.37g/100g) and tannin (41-166mg/100g). Cooking in different utensils had no effect on these parameters. Ascorbic acid content ranged from 8.7 to 88.3mg/100g in fresh greens and was reduced by 18-64% on cooking. The total and ionisable iron contents of greens ranged from 3 to 13mg/100g and 0.43 to 2.7mg/100g, respectively, and increased on cooking in iron utensil to 9.7 to 17.5mg/100g and 1.50 to 8.56mg/100g, respectively. The availability of iron, in relation to total iron, of greens cooked in iron utensils was either comparable or marginally higher than those cooked in other metallic utensils. Since the total iron content of greens cooked in iron utensils was high, the actual amount of available iron also increased. It can be concluded that cooking in iron utensils increases the total as well as the available iron content of greens [Kumari Mamatha, Gupta Sheetal, Lakshmi A Jyothi and Prakash Jamuna, Iron bioavailability in green leafy vegetables cooked in different utensils, Food Chem, 2004, 86 (2), 217-222].

Gut stimulatory activity of Radish

Radish leaves have been ethnically used as laxative, stimulant, digestive aid, appetizer, and in other disorders of stomach which points out towards the presence of gut stimulatory constituents. The scientists at Department of Biological and Biomedical Sciences, The Aga Khan University Medical College, Karachi, Pakistan studied the effect of crude extract of Radish, Raphanus sativus Linn. leaves (Rl.Cr) showed a dose-dependent (0.03-5.0 mg/ml) spasmogenicity in guinea-pig ileum and colon. The effect was insensitive to atropine pre-treatment but was completely abolished by pyrilamine indicating involvement of histaminergic (H₁) receptors. The contractile effect at high doses (3.0-5.0 mg/ml) was followed by relaxation. Rl.Cr also enhanced the transit of charcoal meal in mice at 30-100 mg/kg. The petroleum spirit, chloroform and aqueous fractions all showed histaminergic activity in ileum; aqueous fraction being more potent. The study shows the presence of a histaminergic component(s) along with a weak spasmylic factor thus providing sound mechanistic basis for the traditional use of the plant in constipation [Hassan Gilani Anwarul and Ghayur M Nabeel, Pharmacological basis for the gut stimulatory activity of Raphanus sativus leaves, J Ethnopharmacol, 2004, 95(2-3), 169-172].