

Determination of *in vitro* Availability of Iron from Common Foods

P. Das¹, N. Raghuramulu² and K. C. Rao³

1. Department of Food and Nutrition, College of Home Science, Assam Agricultural University, Jorhat-785 013, Assam, India

Telefax : 0376-340011; E-mail: pranatidas@aau.ac.in

2. National Institute of Nutrition, Hyderabad 500 007, Andhra Pradesh, India

3. Department of Food and Nutrition, College of Home Science, Acharya N.G. Ranga Agricultural University, Hyderabad 500 030, Andhra Pradesh India

KEYWORDS Total Iron. Ionizable Iron. Foods. Ascorbic Acid. Tannin

ABSTRACT Some common foodstuffs of plant origin were analyzed spectrophotometrically using derivative spectroscopy for total and *in vitro* available iron (ionizable iron). Though rice had lowest total iron content (0.61 ± 0.09 mg/100g), the percent ionizable iron was highest ($29.50 \pm 4.75\%$) as compared to all other cereals and millets tested and also comparable to some of the whole pulses analyzed. Similarly, maize with comparatively lower total iron content (2.73 ± 0.14 mg/100g), had a higher percent ionizable iron ($25.30 \pm 1.46\%$). The whole pulses were found to contain total iron ranging from 4.40 ± 0.30 mg/100g in blackgram to 6.36 ± 0.55 mg/100g in rajmah, but except Bengal gram (white) ($21.71 \pm 0.53\%$), pea ($35.66 \pm 4.44\%$) and rajmah ($24.05 \pm 1.42\%$), others showed very low ionizable iron (3.41 ± 0.22 - $6.53 \pm 1.31\%$). Split pulses had a better percentage of ionizable iron (13.80 ± 0.73 - $31.70 \pm 1.74\%$) compared to whole pulses, which could possibly due to removal of some inhibiting factors present in the seed coat. Though green leafy vegetables had comparatively lower amount of total iron (1.82 ± 0.11 - 3.76 ± 0.23 mg/100g), it had a high ionizable iron from 30.22 ± 1.10 to $52.13 \pm 1.90\%$. Endogenous levels of ascorbic acid and tannin present in the food samples evaluated had no direct influence on iron availability. The results by spectrophotometric method were further compared with radioisotopic method by extrinsic tagging of a few samples with ⁵⁹Fe. A significant positive correlation ($r=0.986$; $P<0.001$) was observed between the two methods.