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Research Paper

Organoleptic evaluation, nutritional quality and storability of iron rich supplement based on green leafy vegetable

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ABSTRACT : Green leafy vegetables offer a moderate but natural source of iron. In the present study, Bengal gram leaf powder was used with *amla* powder, jaggary, coconut powder, rice flake powder and milk powder in different proportions for development of a product (*laddu*) to combat the problem of anemia as it can be easily consumed by vulnerable groups. Out of four trials (A, B, C and D) of *laddu*, iron rich *laddu* (A) was liked very much with the score of 8 on nine point Hedonic scale. Iron content and in *vitro* iron bioavailability were 17.5mg per cent and 2.85 per cent, respectively. However, 19.87 mg and 2.83 per cent, respectively on dry weight basis of iron rich supplements. The content of iron, vitamin C and *in vitro* iron bioavailability were found to be decreased during storage. Storage study revealed that the iron rich *laddu* (A) was acceptable upto two months of storage in air tight jar at room temperature (29^0-34^0).

KEY WORDS : Green leafy vegetables,Bengal gram, Iron, Iron rich supplement, Iron bioavailability

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Anemia is a major public health problem in India. Prevalence of anemia is disproportionately high in developing countries due to poverty, inadequate diet, high levels of malaria and other infectious diseases; frequent reproductive cycling that decreases body iron stores and poor access to health services (Florentino, 2003). Study of National Nutritional Monitoring Bureau (NNMB) on the prevalence of micronutrient deficiency indicates that prevalence of anemia was highest (78 %) among lactating women followed by pregnant women with 75 per cent.

Anemia among adolescent girls and school children was found to be 70 per cent and 67 per cent, respectively (Babu, 2006). Targeted three main strategies existing are education, combined with dietary modification or diversification or both, to improve iron intake and bioavailability, iron supplementation and iron fortification of foods for correcting iron deficiency in population. A new approach is biofortification *via* plant breeding or genetic engineering (Zimmermann and Hurrell, 2007). Green leafy vegetables (GLV) offer a cheap but rich source of a number of micronutrients and phytochemicals having antioxidant properties. India having a variety of natural surroundings and varying climates and seasons, has a numbers of species of edible leafy vegetables such as spinach, amaranth, Bengal gram leaves, cauliflower leaves, mint and coriander (AVRDC, 1996).

Chana (*Cicer arietinum*) known as Bengal gram or chickpea is a major pulse crop in India and accounts for 40 per cent of total pulse production (Oudhia, 2003). Bengal gram leaves are less commonly used in saag and dal preparations in rural areas. They are relatively inexpensive, easily and quickly cooked and rich in several micronutrients such as beta-carotene, vitamin C, vitamin E, zinc, selenium and iron. Hence, the present study was undertaken to develop an iron rich supplement *laddu* and determine the proximate composition, vitamins, minerals and *in vitro* iron bioavailability on as in basis and dry weight basis. Sensory quality and storage stability were also studied.

RESEARCH METHODS

Procurement of raw materials:

The Bengal gram leaves for the investigation were procured from the Vegetable Research Centre of the G.B. Pant