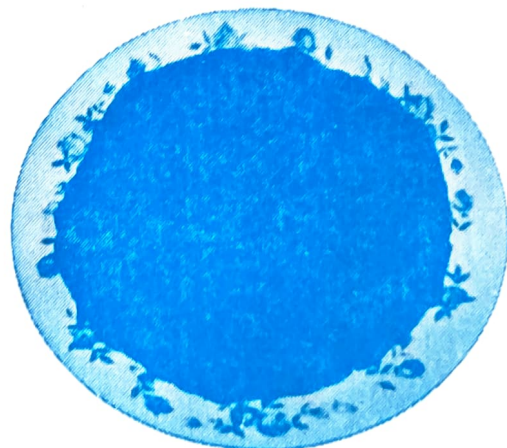
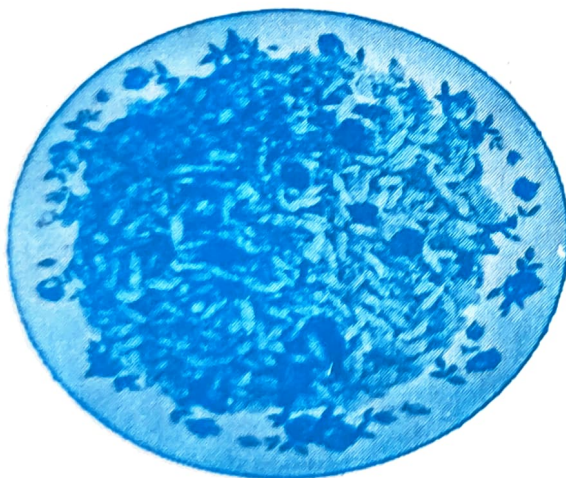
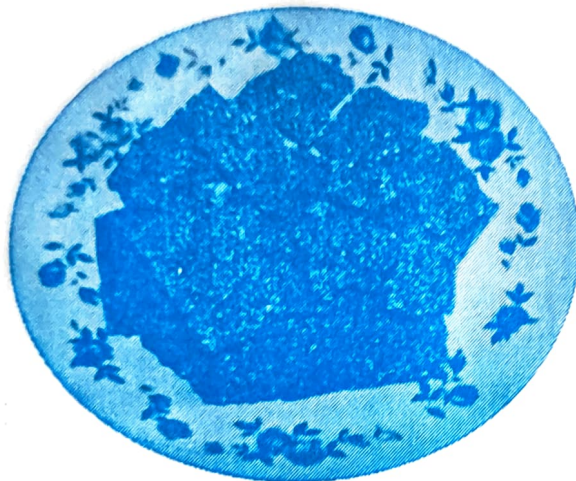


IRON RICH RECIPES



DEPARTMENT OF FOODS AND NUTRITION
COLLEGE OF HOME SCIENCE
MARATHWADA AGRICULTURAL UNIVERSITY,
PARBHANI

2004

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All India Co-ordinated Research Project in Home Science

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INTRODUCTION

Iron is an ubiquitous metal. When we consider iron as a nutrient it is essential for the physical wellbeing of human beings. Iron is an essential element for the formation of haemoglobin in the blood. It plays an important role in the transport of oxygen. Tissues also require iron for various oxidation reduction reaction.

Iron deficiency anemia is the most prevalent nutritional deficiency worldwide. Incidences of iron deficiency anaemia has been increasing at an alarming rate calling for global attention. About 40 per cent of the world population suffers from anaemia. The primary reasons for iron deficiency anaemia are Inadequacy in the intake of dietary iron or poor absorption of dietary iron, reduced bioavailability of dietary iron, increased need for iron, chronic blood loss. It is gradual process and takes several months to show up. Impact of iron deficiency anaemia on psychological and physical development, behaviour and work performance is phenomenal.

The four basic approaches to the prevention of iron deficiency anaemia are supplementation with medicinal iron, education and associated measures to increase dietary iron intake, the control of the infection and the fortification of staple food with iron and the most practical and prophylactic measure for the control and prevention is to increase the intake of iron by a way of increased consumption of iron rich foods in daily diet. Foods like meat, fish, groundnuts, beans, peas, dark green leafy vegetables, dried foods etc are the rich sources of iron.



There are two distinct types of dietary iron-haem and non-haem iron. Haem iron is a constituent of haemoglobin and myoglobin and therefore is present in meat, fish and poultry as well as in blood products. Haem iron accounts for a relatively small fraction of total iron intake usually less than 1 - 2 mg of iron per day. The second type of dietary iron, non-haem iron, is a more important source, it is found in varying degrees in all foods of plant origin.

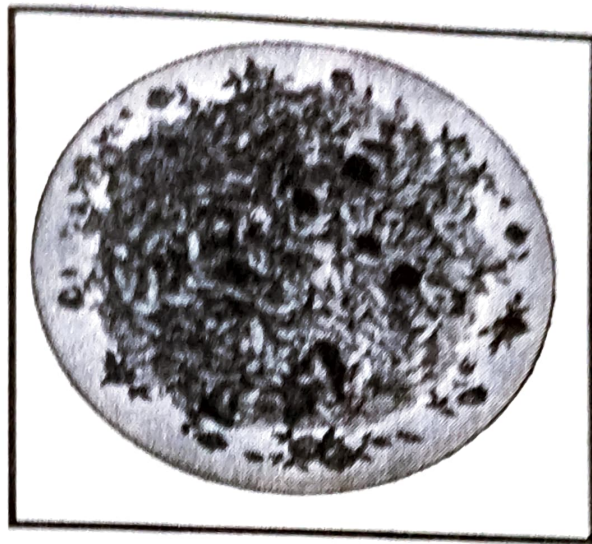
Green leafy vegetables are very good sources of iron and inexpensive in cost and are available throughout the year. Inclusion of about 50g of green leafy vegetables in daily diet can meet a fair proportion of iron requirements besides providing calcium, beta carotene and vitamin C. Green leafy vegetables which are commonly consumed in the daily diet like spinach, coriander leaves, drumstick leaves, fenugreek leaves, mint leaves, curry leaves etc. were dried at the temperature 60°C in the mechanical drier. These dried leafy vegetables and roasted groundnuts, sesamum, niger seeds, cumin seeds were powdered and all the ingredients were mixed thoroughly. The prepared powder was incorporated in various commonly consumed iron rich recipes. The iron rich recipes were developed, standardised and its nutritional quality was analysed in the laboratory of foods and nutrition under All India Co-ordinated Research Project, in College of Home science, Marathwada Agricultural University, Parbhani. The detail information of iron rich recipes are given in this booklet.

ROASTED RICE FLAKES CHIWDA

INGREDIENTS	AMOUNT (g)
Roasted rice flakes	35
Groundnut	10
Coriander leaves	10
Onion	10
Curry leaves	0.5
Dry coconut	6
Oil	10
Turmeric powder	0.5
Chilly powder	1
Cumin seeds	0.5
Cumin seed powder	0.5
Mustard seeds	0.5
Sugar	2
Sesamum	4
Puffed bengal gram dhal	8
Niger seed powder	0.5
Coriander seed powder	0.5
Salt	To taste
Citric acid	Pinch

METHOD

- Clean the groundnuts.
- Roast the groundnuts till brown and remove the skin of groundnuts.
- Heat the oil add mustard seeds ,cumin seeds,chopped onion,coriander leaves,groundnut,curry leaves,dry coconut,puffed bengal gram dhal and fry well.
- Add red chilli powder,turmeric powder ,roasted poha, sesamum,salt,citric acid and sugar.
- Sprinkle cumin seed powder and coriander seed powder and mix well.



Other information

Cooked weight	75 g
Cooked volume	1 heaped plate
Cost per serving	Rs.2.50
Recommended storage period	7 days

Nutrient composition on fresh weight basis

Nutrients	Per 100 g	Per Serving
Moisture (g)	3.75	2.81
Protein (g)	6.41	4.81
Fat (g)	18.3	13.7
Minerals (mg)	0.6	0.45
Fibre (g)	2.02	1.51
Carbohydrate (g)	68.8	51.6
Energy (kcal)	466	349
Calcium (mg)	85	64
β -Caretone (μ g)	320	240
Iron (mg)	12.6	9.45
Available iron(mg)	7.27	5.45

PALAK PARATHA

INGREDIENTS	AMOUNT (g)
Jowar flour	19.2
Bengal gram flour	12.8
Poha powder	12.8
Turmeric powder	0.32
Chilly powder	0.64
Salt	To taste
Oil	6.4
Dried spinach	2.24
Mixed powder	1.28
Gingelly seeds	7.68
Niger seed powder	1.92
Roasted groundnut powder	6.4

METHOD

- Mix all ingredients by adding required amount of water and make a dough.
- Make even balls of prepared dough and roll in to round shape.
- Roast it on tawa by applying oil.



Other information

Cooked weight	100 g
Cooked volume	1 No.Medium
Weight per serving	100 g
Cost per serving	Rs. 2.75

Nutrient composition on fresh weight basis

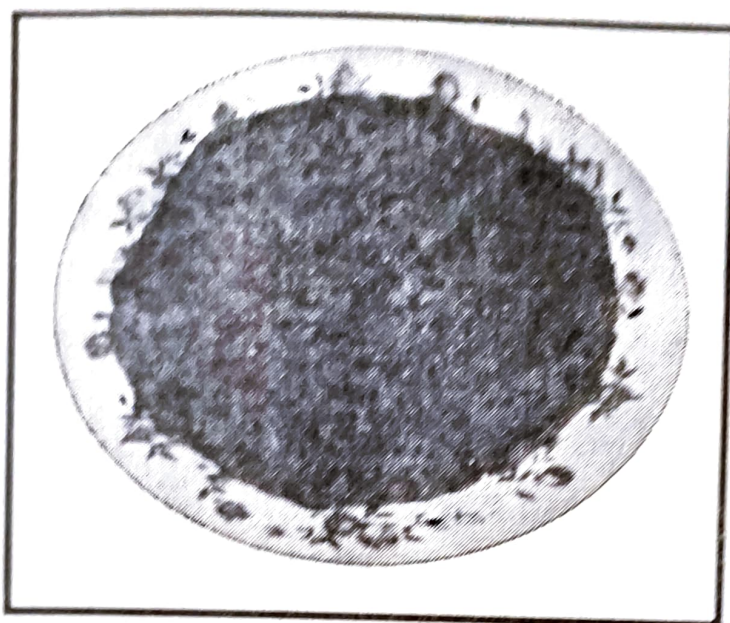
Nutrients	Per 100 g	Per Serving
Moisture (g)	27.4	27.4
Protein (g)	16.3	16.3
Fat (g)	13.8	13.8
Minerals (mg)	3.0	3.0
Fibre (g)	2.4	2.4
Carbohydrate (g)	36.9	36.9
Energy (kcal)	337	337
Calcium (mg)	102	102
β -Carotene (μ g)	800	800
Iron (mg)	9.6	9.6
Available iron(mg)	5.7	5.7

DRUMSTICK LEAVES DHAPATA

INGREDIENTS	AMOUNT (g)
Jowar flour	19.5
Bengal gram flour	13
Poha powder	13
Turmeric powder	0.32
Chilly powder	0.65
Salt	To taste
Oil	6.5
Dried drumstick leaves	2.27
Mixed powder	1.3
Gingelly seeds	7.8
Niger seed powder	1.95
Roasted groundnut powder	6.5

METHOD

- Mix all ingredients by adding required amount of water and make a dough.
- Make even balls of prepared dough and roll in to round shape.
- Roast it on tawa by applying oil.



Other information

Cooked weight	100 g
Cooked volume	1 No. Medium
Weight per serving	110 g
Cost per serving	Rs. 2.25

Nutrient composition on fresh weight basis

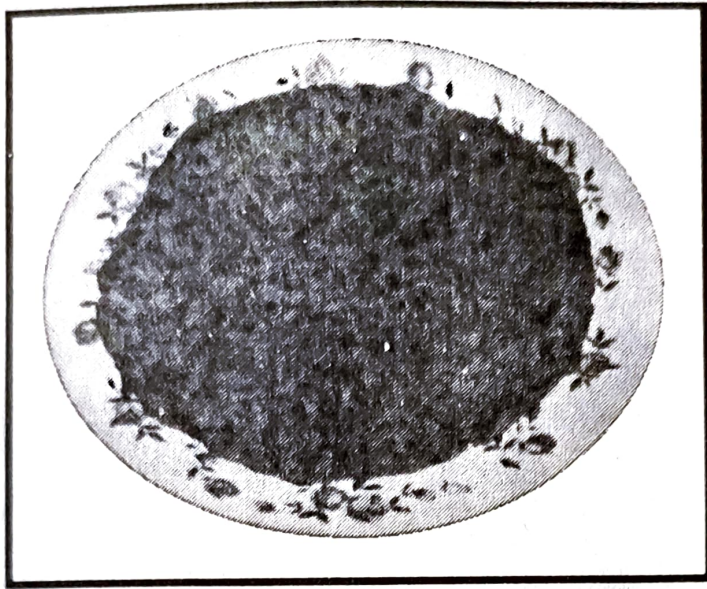
Nutrients	Per 100 g	Per Serving
Moisture (g)	27.45	29.85
Protein(g)	12.83	14.11
Fat (g)	12.6	13.86
Minerals (mg)	3.41	3.75
Fibre (g)	2.89	3.17
Carbohydrate (g)	40.81	44.90
Energy(kcal)	327	360
Calcium (mg)	112	123.2
β -Carotene (μ g)	2240	2464
Iron (mg)	8.6	9.46
Available iron (mg)	2.52	2.77

CORIANDER LEAVES DHAPATA

INGREDIENTS	AMOUNT (g)
Jowar flour	15
Bengal gram flour	10
Poha powder	10
Turmeric powder	¼ tea spoon
Chilly powder	½ tea spoon
Salt	To taste
Oil	5
Dried coriander leaves	1.7
Mixed powder	1
Gingelly seeds	6
Niger seed powder	1.5
Roasted groundnut powder	5

METHOD

- Mix all ingredients by adding required amount of water and make a dough.
- Make even balls of prepared dough and roll in to round shape.
- Roast it on tawa by applying oil.



Other information

Cooked weight	100 g
Cooked volume	1 No. Medium
Weight per serving	80 g
Cost per serving	Rs. 2.60

Nutrient composition on fresh weight basis

Nutrients	Per 100 g	Per Serving
Moisture (g)	28.75	23.0
Protein(g)	11.8	8.86
Fat (g)	16.0	12.8
Minerals (mg)	3.16	2.58
Fibre (g)	3.04	2.43
Carbohydrate (g)	37.97	30.3
Energy(kcal)	340	272
Calcium (mg)	104	83
β-Carotene (μg)	820	6506
Iron (mg)	12.65	10.12
Available iron (mg)	3.60	2.88

SESAMUM CHIKKI

INGREDIENTS	AMOUNT(g)
Sesamum	26
Jaggery	29
Ghee	1.5

METHOD

- Clean and roast sesamum till golden brown colour.
- Make syrup with water and jaggery of one string consistency.
- Add roasted sesamum in it and mix well.
- Cook on slow fire for few minutes when it leaves the edges of the vessel remove it from fire.
- Pour and spread evenly the mixture turn in to a greased meal plate.
- Cut in to cubes before it hardens.



Other information

Cooked weight	65 g
Cooked volume	6 No.small
Weight per serving	65 g
Cost per serving	Rs. 2.15
Recommended storage period	15 Days

Nutrient composition on fresh weight basis

Nutrients	Per 100 g	Per Serving
Moisture (g)	3.2	2.08
Protein(g)	21.0	13.65
Fat (g)	44.3	28.80
Minerals (mg)	2.6	1.69
Fibre (g)	2.90	1.88
Carbohydrate (g)	25.62	16.6
Energy(kcal)	615	400
Calcium (mg)	350	227
Iron (mg)	14.7	9.55
Available iron (mg)	3.48	2.26

Iron Content of Food Stuffs Used in the Preparation of Iron Rich Recipes

Sr. No.	Name of food stuffs	Iron content (mg/100gm)
1.	Jowar	4.00
2.	Roasted Rice Flakes	20.00
3.	Bengal gram dhal	5.30
4.	Puffed bengal gram dhal	9.05
5.	Coriander leaves	1.42
6.	Curry leaves	0.93
7.	Mint leaves	5.03
8.	Spinach	1.14
9.	Drumstick leaves	0.85
10.	Onion Red	0.60
11.	Dry coconut	7.08
12.	Groundnut Roasted	12.00
13.	Mustard seeds	7.09
14.	Niger seeds	56.07
15.	Sesamum	9.03
16.	Asafoetida	2.64
17.	Chilly powder	2.03
18.	Cumin seeds	7.09
19.	Coriander seeds	7.01
20.	Jaggery	2.64
21.	Sugar	0.155