



## **Home Fortification of food with Iron rich Herbal Chooranam in Siddha for the management of Iron deficiency anaemia – A Review**

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### **Abstract**

At the global level, about 1.62 billion people are affected by anaemia which corresponds to 24.8% of the world's population. In that nutritional iron deficiency anaemia is the most common type of anaemia. Although iron deficiency anaemia is the most prevalent kind, it is generally manageable with dietary adjustments. WHO guidelines, policies and interventions aim to increase dietary diversity and intake of iron and micronutrients through fortification or supplementation. WHO released strong recommendations in 2011 in support of home fortification of foods with Multiple micro nutrient powders to improve iron status and reduce anaemia among young children. The studies proven that these multiple micronutrient powders have some side effects like diarrhoea, vomiting, constipation. This can be overcome by using iron rich herbal chooranams (Powders) in Siddha like karisalai chooranam, kariveppillai chooranam, murungai ilai chooranam, nellikai chooranam etc., for home fortification purpose. This article discusses the importance of iron rich herbal chooranams in home food fortification process for iron deficiency anaemia in detail.

**Keywords:** anaemia, iron deficiency, herbal chooranams

### **Introduction**

Anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal. The most common causes of anaemia are nutritional deficiencies, particularly iron deficiency. As per National Family Health Survey (NFHS) nearly 50 - 80% of Indian mothers suffer from anaemia due to Iron deficiency.<sup>(1)</sup> One of a method used to

prevent iron deficiency is to fortify food with iron. Iron fortification of foods appears to be the least expensive and most efficient method for reaching a large population without the use of pharmaceutical drugs. Ascorbic acid (vitamin C), folic acid, citric acid, peptides rich in amino acid cysteine, and vitamin A are enhancers of iron absorption.<sup>(2)</sup> The latter can prevent inhibitory effects resulting from coffee, tea and phytates.

A menstrual woman has roughly 40 mg/kg of iron due to her reduced erythrocyte quantity and iron reserve, whereas an adult man weighing 75 kg contains about 4 grams of iron (50 mg/kg) <sup>(3)</sup>.

**Table 1 : The amount of Iron need per day <sup>(4)</sup>**

Gender	Age	Iron need for a day ( mg)
Men	Over 18	8.7 mg
	19 to 50	14.8 mg
Women	Over 50	8.7 mg

For adult men to maintain iron balance, only about 1 mg must be absorbed daily. Women who are menstruation typically need somewhat more, about 1.5 mg each day <sup>(5)</sup> However, there is a significant interindividual variation in the amount lost during menstruation, and a tiny percentage of women need to absorb up to 3.4 mg daily. Towards the end of pregnancy, the absorption of 4 to 5 mg/day is necessary to preserve iron balance. Requirements are also higher in childhood, particularly during periods of rapid growth in early childhood (6 to 24 months), and adolescence <sup>(5)</sup>

### Types of fortification

According to WHO, Fortification is the practice of deliberately increasing the content of one or more micronutrients (i.e., vitamins and minerals) in a food or condiment to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health. <sup>(6)</sup> It is a proven, safe and cost-effective strategy for improving diets and for the prevention and control of micronutrient deficiencies.

There are three type of fortification are large scale food fortification, biofortification, home fortification <sup>(7)</sup>

### Large scale food fortification

Industrial or large-scale food fortification (LSFF) is the addition of micronutrients during processing to commonly consumed foods such as salt, flours, oil, sugar and condiments.

### Biofortification

Bio fortification is the process by which food crops are grown to improve their nutritional value. Iron biofortification of rice, beans, maize and sweet potato are common.

### Home fortification

Home fortification is the addition of vitamins and minerals to food that has been cooked and is ready to be eaten. A recent Cochrane review has established that Micro Nutrient Powders are effective in reducing anemia and iron deficiency for children 6–24 months <sup>(6)</sup>

### Review Results

#### Herbal powders for home fortification

Since there are many studies proven that micronutrient powder used for home fortification purpose may produce some side effects like vomiting, diarrhoea and constipation. <sup>(8)</sup> To overcome this problem, it is recommended to fortify diet using the iron-rich siddha herbal chooranams. This can be carried out at home or in any other location where meals are eaten. (e.g., office, college). Single dose of siddha herbal chooranam (any one of the following according to the IDA status of the patient) mixed into any semi solid food and advised to consume regularly. Since these are regularly using herbals which may not cause any side effects.

**Table 2: Siddha herbal Chooranams and its Iron content**

S.No	Siddha herbal powders	Botanical names	Parts used	Iron content mg/100mg
1.	Murungai ilai chooranam	<i>Moringa oleifera</i>	Dried leaves	97.9 µg/g <sup>(9)</sup>
2.	Kariveppilai chooranam	<i>Murraya koenigii</i>	Dried leaves	12 mg/100g <sup>(10)</sup>
3.	Araikeerai chooranam	<i>Amaranthus spinosus</i>	Dried leaves	236.6 mg/100 g <sup>(11)</sup>
4.	Manathakkali keerai chooranam	<i>Solanum nigrum</i>	Dried leaves	496 mg/100g <sup>(12)</sup>

## Conclusion

Population-wide fortification programs were linked to a 34% decrease in anemia due to increased iron reserves, with greater benefits realized by those most at risk of deficiency.<sup>(13)</sup> The main challenge is to protect the fortification iron from potential inhibitors of iron absorption present in commonly fortified foods. This is a very basic review article about utilizing herbal powders to fortify diet at home to treat Iron deficiency anemia, further clinical studies will be required in the near future.

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