

Supplementation of Spirulina for anaemic labours of cotton mill

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ABSTRACT

Spirulina is a fast growing blue-green algae belongs to the family oscillatoriaceae cyanophyceae. It provides as much as iron as 80g of liver or nearly two cups of fresh spinach. So we have assessed to improve the iron status of anemic women after supplementing with Spirulina based murukku. Currently available data indicates that about one third of world's population suffer from iron deficiency anemia. Immediately after delivery, 52 percent of women from greater Monkton and 40 percent from the Acadian peninsula had hemoglobin below normal. Therefore by providing Spirulina it prevents anemia, when hemoglobin is low.

Key words: Spirulina murukku, anemic female labourers, Anthro pometric measurement.

INTRODUCTION

Anaemia mainly due to iron deficiency is a major nutritional problem in India affecting adolescent girls, pregnant and lactating mothers and pre school children. According to the report of the world health organization meeting on nutritional anaemia iron deficiency occurs when there is derangement of iron balance either due to inadequate dietary intake of poor bioavailability of dietary iron. More than 2 billion people are at risk of iron deficiency anaemia.

NIA found that 61.9% of the subjects in the urban and 58.4% in the rural areas were anaemic.iron deficiency anaemia also called "Iron poor blood" is a condition that result from depletion of ones iron reserves. Iron's main function in the body is to combine with protein to form haemoglobin, the red substance in blood that carries oxygen to the cells and carbon dioxide from the cells. Iron deficiency anaemia causes reduced oxygen carrying capacity of the blood, resulting in paleness of the skin, weakness, and shortness of breath, lack of appetite and general slowing of vital functions of the body.

Methodology

Selection of area

Hence, a study was undertaken to assess the women's health, nutritional status that working in cotton mill at Namakkal District. The total numbers of 136 women were assessed for their blood haemoglobin content and clinical symptoms. A sub sample of 20 anaemic women was selected randomly from the K.S.R cotton mill considering their willingness and co-operation for their studies.

Selection of subjects

Women were chosen as subjects because they are the weaker section of the society. Women working in cotton mill in the age group of 20-35 years were selected and their blood haemoglobin was analyzed. Among them 10 anaemic females were selected and supplemented with spirulina based murukku and another 10 anemic females were formed control group and were not supplemented with spirulina based murukku.

Collection of data

The information was collected from their subjects using interview-cum-questionnaire method. The subjects were interviewed and their details

regarding the socio economic status, dietary pattern, nutritional knowledge anthropometric measurement and biochemical analysis were collected as per the schedule.

Formulation of spirulina based murukku

Spirulina based murukku was formulated using rice flour, roasted Bengal gram flour, omum, gingelly seeds and oil. The procedure for the preparation of spirulina based murukku.

Organoleptic evaluation

Organoleptic evaluation in the composite characteristic which determines the degree of acceptability of specific product of the consumer. The quality attributes of the convenience food was taken into component characteristic like appearance, texture, flavor, taste, etc., The sensory quality of the spirulina-based murukku was done by ten-trained panel members using the scorecard.

Nutrient analysis

The following nutrients were analyzed for spirulina based murukku. Iron by Wong's method and moisture content by hot air oven drying method.

Supplementation to experimental group

5g of spirulina was incorporated into 45 g murukku mix and was supplemented to the experimental group for the period of 60 days.

Analysis of the data

The data regarding body mass index, blood haemoglobin levels, serum iron levels and packed cell volume were collected before and after the supplementation period for the experimental group and control group. The data obtained from the study consolidated, tabulated, analyzed and concluded.

Table 1: Comparison of mean blood haemoglobin level between control and experimental group before and after supplementation

Groups	Number	Haemoglobin level g/ml		Difference	Groups compared	't' value
		Before supplementation	After supplementation			
Control	10	8.92 (a)	8.94 (b)	0.2	a and b c and d	1.0 ^{NS} 29.50 ^{**}
Experiment	10	8.25 (c)	9.91 (d)	1.66	a and c b and d	3.28 ^{**} 4.70 ^{**}

**significant at 1% level, NS – Not Significant.

Table 2: Comparison of mean serum iron level between control and experimental group before and after supplementation

Groups	Number	Haemoglobin level g/ml		Difference	Groups compared	't' value
		Before supplementation	After supplementation			
Control	10	40.13 (a)	40.05 (b)	0.08	a and b c and d	1.8 ^{NS} 9.392 ^{**}
Experiment	10	40.38 (c)	42.4 (d)	2.02	a and c b and d	0.042 ^{NS} 0.38 ^{NS}

**significant at 1% level, NS - Not Significant

RESULTS AND DISCUSSION

63 percent of the females had moderate anaemia, 24 percent of them had mild anaemia, and 19 percent of them were normal and 4.4 percent of them had severe anaemia. 39 percent of the selected anaemic females were of the age group 20 – 25 years and the rest were "between 26 – 35 years. 75 percent of the selected were literate and 20 percent were illiterate.

CONCLUSION

The mean height, weight and body mass indexes of the selected subjects were found to be less than the normal values given by ICMR. The mean blood haemoglobin level before

supplementation was found to be 8.25 g/dl and after supplementation it was found to be 9.91 g/dl. Statistically, increase was found to be significant at 1% level. The mean initial serum iron of the selected subjects was found to be 40.38 µg/dl. Statistically the increase was found to be significant at 1% level. The mean packed cell volume of the selected subjects was found to be 31% and after supplementation it was 33.03 percent. Statistically the increase was found to be significant at 1 % level.

Further recommendations

1. Determining the effect of supplementing spirulina on blood glucose levels.
2. Determining the effect of spirulina on the treatment of cancer.

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