ISSN 0974-763X

SOUTH ASIAN JOURNAL OF MANAGEMENT RESEARCH (SAJMR)

Volume 6 Number 1 January 2014

CONTENTS

Theme: Food Technology and Management

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SOUTH ASIAN JOURNAL OF MANAGEMENT RESEARCH (SAJMR)

ISSN 0974-763X
(An International Peer Reviewed Research Journal)

Published By
Chhatrapati Shahu Institute of Business Education and Research (CSIBER)
University Road, Kolhapur – 416 004, Maharashtra, India
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Editorial Note

In the last two decades India has experienced number of changes in the business and industrial environment. The New Reforms of 1991 has been able to provide a dynamic business environment that was lacking in the first five decades after independents. Accordingly new and hitherto unobserved business opportunities have emerged for budding entrepreneurs. The traditional and conventional business lines have taken a back seat. Sum of these emerging areas of business are outsourcing, consultancy, hospitality, tourism and others.

The Food Technology, Management and Food Services Sector also are under this important emerging area. Late Prof. Dr. A. D. Shinde, The Founder Director of CSIBER Trust, realized the importance of this field way back in early eighties. To realize his dream he started the College of Non-Conventional and Vocational Courses for Women (CNCVCW) at Kolhapur. He introduced innovative courses especially for women. These courses are skill oriented and help the women to find suitable placement in Food, Fashion and Interior Designing fields. At the same time they are equipped and trained to start their own business and become a source of employment for others in the society.

As a part of the academic responsibility and make the stakeholders aware about the recent trends in the three sectors, the college regularly conducts seminars, workshops and conferences. This year the college conducted a National level conference on the Recent Trends in Food Technology and Management on 28th and 29th March 2014. The conference received overwhelming response. There were almost 35 participants from different parts of the country presenting their research papers on different sub themes of the conference. In the poster presentation category there were almost 15 participants displaying their ideas and innovations in the area of Food and Management.

The topics covered in the papers submitted for the conference dealt with innovations in Food Processing industry, Bio technological aspects, Legal environment for food industry and the management trends in the sector. The national conference was able to attract good research papers on different themes from participants hailing from various states of our country. In the present issue we publish selected research papers of the conference. These papers will serve as an academic input for all those scholars interested in this specialized and emerging area.

Dr. T. V. G. Sarma
Editor

Impact of Convenient Soya Products Supplementations on Vitamin Intake of Malnourished Preschool Children

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ABSTRACT : Protein calorie malnutrition is major nutritional problem of the world. To treat malnutrition among the preschool children the formulation of locally based protein rich product is must hence attempt was made to formulate soyabased food products such as soyaladoo, soyachakali and soyaflakes chiwada. These products were evaluated for its minor and major nutrients. The status of vitamins like vitamin B_1, vitamin B_2, vitamin C ,niacin & β carotene etc consumption significantly increased after supplementation of these soya products to preschool malnourished children for six months respectively. The malnourished preschool children were classified as grade II & III. These products were given to preschool malnourished children @50 gm product/day /child. It provides energy, protein & fat as per ICMR recommendation.

Key Words: Soyladoo, soyachakali, soyaflakes chiwada and Supplementary Feeding

1.0 INTRODUCTION :

Soyabean is oilseed legume group getting its importance as cash crop as well as legume crop. It contain 40 per cent of protein. Among all legume it is only the cheapest legume having nutracetical properties. It content almost all nutrients and plenty of antioxidantive properties. (Ghatge N.S. 2013) It content isoflavonoids. The amino acid pattern of the soyabean is similar to cow milk. The proteins are alkaline in nature. Due to its high biological value it content good number of essential amino acids. Hence it can be used to prevent protein calorie malnutrition among vulnerable group of community. The regular intake of traditional soya foods help to prevent –breast cancer, postrate cancer, color cancer and menopausal problem of women Kaushik (2010). Regular intake of soyabean also prevent hyper cholesterol level in the blood; by preventing atherosclerosis Messina (1997) Consumption of soyabean daily suitable for diabetic patients. It also prevents osteoporosis in elderly person. It content emulsifier and helps in dispose of fatty material from vital organs.

2.0 MATERIALS AND METHODS :

2.1 Formulation:

Formulation and preparation of soyaladoo, soyachakali and soyaflakes chiwada was done by using standard method by (Phillips & Thangana 1971)

2.2 Sensory Evaluation :

Soya products were prepared and evaluated organoleptically by "Hedonic scale" (Amerine et al. 1965).

2.3 Nutritional Evaluation:

Nutritional quality analysis. Moisture content, total ash, major nutrient like crude protein, fat, carbohydrates, B complex vitamins including vitamin B_1,B_2 and B_3 , minerals such

as iron, calcium, zinc and crude fiber were analyzed by use of methods described in (AOAC1984 and Rghunramula 1983)

2.4 Statistical analysis :

The analysis significant at $p < 0.05$ level, S. E. and CD. at 5 per cent level by the procedure given by (Gomez and Gomez 1984).

3.0 RESULTS AND DISCUSSION

Figure 1.1 expressed the month wise intake of thiamine (vitamin B1) by experimental groups during entire period of supplementation. It shown that, only Group I which provided soyaladoo as a supplementary food observed a moderate adequate per cent of intake of thiamine. In the initial level it was noticed as 79.2 per cent thiamine intake and found increased up to 85.0 per cent in the last month of period. The ranging in per cent of thiamine intake of Group II reported as 74.0, 75.6, 76.7 77.5, 78.1 and 80.0 per cent month of I, II, III, IV, V and VI respectively. Group III noticed in IIIrd position according to their month wise thiamine intake very low per cent intake of thiamine was shown in control group.

Figure no. 1.2 gives an idea about the month wise intake of riboflavin (Vitamin B_2) by experimental groups during the supplemented period. It revealed that, there was slightly difference noticed in month wise intake of riboflavin among group I,II and III. However, the remarkable change was reported as compared between the intakes of riboflavin in groups I, II and III with control group. A steady intake of riboflavin was found in all the months (Ist to VIth) in control group during entire period of supplementation.

A similar observations were noted in the month wise intake of niacin (vitamin B_3) among Group Ist, IInd, IIrd and control i.e. IVth shown in Fig 1.3. Month wise intake of niacin group I slightly found at upper per cent level than that of group II and III. Where as the intake of niacin ranging as 41.0 to 44.0 Per cent from Ist to VIth months respectively.

Month wise intake of vitamin 'C' among different experimental groups were given in figure 1.4. It shown that, at beginning Ist to II nd months intake of Vitamin 'C' was noted more in Group Ii,. It was found decreased from 67.1 per cent in II nd month to 65.4 per cent in IIrd month. However, vitamin C intake in the month of Ist noted as 62.5 per cent and increases to 75.9 per cent in VIth month in Group I. There was no remarkable change observed in vitamin C intake in the months of I, II and III among groups II and III. Control group found lower intake of vitamin C during the entire period experiment.

From the beginning month, group IInd preschool going children who were supplemented with soyachakali reported higher intake of β carotene during entire period of supplementation shown in Fig 1.5. This group noted β carotene intake Ist month was only 41.0 per cent and found increases to 56. Per cent in VIth month of experiment. Group I and III observed IInd and IIIrd position according to their month intake of β carotene at decreasing level

as increasing the months of experimental period. Intake of β carotene in group IV i.e.control noted 38.0 per cent and found decreased as 36.0 per cent in last month of experiment.

Average the B complex vitamin composition show in table 1 group of vitamins, intake of thiamine by group I was recorded as highest i.e.0.65 mg which recorded as 78.7per cent. Followed by group II it was noted as 0.60(mg)±0.1 and group III who observed as 0.54(mg)±0.1 intake of thiamine. Control group found to consumed vitamin B_1 as 0.31(mg) 0.06which was reported as only (41.3) per cent. Vitamin B_2 or riboflavin consumption of group I recorded more i.e. 0.63(mg)±0.14and (72.9per cent) which was higher than soyachakali group II and soyaflakes chiwada group i.e. III. The control group consumed only 0.33(mg)±0.1 and(38.8per cent) intake of riboflavin which reported as poorly adequate level. The mean intake of vitamin B_3 or niacin by group I again found as highest score i.e. 0.62(mg)±0.11 it was noted in II rank in group II and III position in the average intake of niacin reported in Group III. Minimum average in niacin intake was observed in control group 0.40(mg)±0.9. A similar average intake of vitamin C was noted by group I and II i.e. 27.2(mg)±1.7and it was noticed below the moderate adequate level (68.0per cent). Where as group III shown vitamin C intake as 25.8(mg)±0.9 which was reported as be low the adequate level (i.e. 62.5 per cen. Very low per cent per cent in vitamin C intake (i.e.56.0) was noticed in control group.

In case of fat soluble vitamin like β carotene intake by all supplemented groups was noticed higher than control group. Among all, group II had highest intake of β carotene as compared with group I and III. The intake of β carotene intake in Group I, II and III was recorded as 1128(μg)±40.1, 1176 (μg) ± 8.5 and 1080(μg) ±7.3 respectively. Very poor intake of β carotene was noted by control group i.e. 757.1(μg)±7.9. Which was observed as below the adequate level. i.e. 47.3 per cent.

The data about average β carotene intake by different experimental groups was recorded in Table 7.11. It indicated that, highly significant increase in percent intake of thiamin was noticed in Group IO (78.0) and Group III (76.0) after supplementation Group III found significant increase form 58.7 to 69.3 per cent in thiamin intake after supplementation. Control group was also noted a significant increase in consumption of vitamin B_1 (from 03to 0.4 mg) after 6 months of experimental period. Average intake of vitamin B_2 or riboflavin was noted increases at highly significant level only in Group I. It was noticed as increased from 64.7 to 74.0 per cent after supplementation. Group III scored in 2nd position, as it found increased vitamin B_2 intake from 60.0 to 73.9 per cent. Where as group II recorded in IIIrd position in the per cent intake of vitamin B_2 (71.8) after supplementation. No significant difference was noticed in control group regarding intake vitamin B_2 before and after supplementation.

In case of vitamin B_3 average intake,

group III and II secured I[st] and II[nd] rank. It noted that, group III found increased the intake of vitamin B_3 from 410 to 61.0 per cent, Group II reported increasing of vitamin B_3 intake from 42.0 to 64.2 per cent These increase in the intake of vitamin B_3 noted as highly significant level among group III and II. However, the per cent of vitamin B_3 was not shown at adequate level. Group I reported as significant increase in per cent of vitamin B_3 intake from 44.2 before supplementation to 65.3 per cent after supplementation. Control group did not found any change in the intake of vitamin B3 after 6 months experimental period.

The average intake of vitamin C was not reported any difference among all the experimental groups as in before and after supplementation period.

β carotene intake was highly significant increased is a group I, II and III after supplementation. Group I, II and III reported as increased its intake of β carotene from 31.3 to 78.5, 36.0 to 73.5 and 20.4 to 67.5 per cent respectively. Control group was also noted increase in β carotene intake at significant level (from 20.4 to 47.3 per cent) after experimental period. However, none of the experimental group found its intake of β carotene at adequate level after supplementation.(Ghatge N.S 2012)

4.0 CONCLUSION:

On whole it can be concluded that the supplementation of soya products to preschool malnourished children have seen significantly increased in their B complex vitamins and β carotene except vitamin C.

Fig. 1.1 Thiamine intake of different experimental groups of preschool children

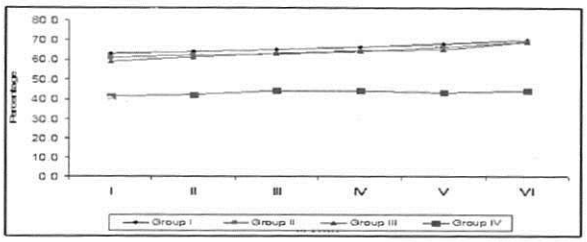

Fig. 1.2 Riboflavin intake of groups of different experimental preschool children

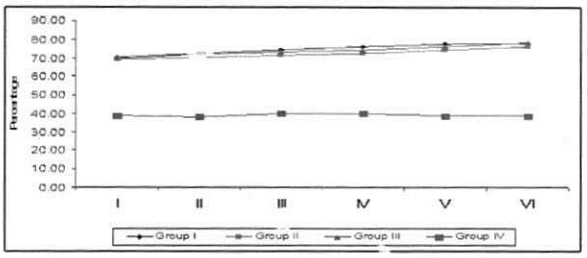

Fig. 1.3 Niacin intake of different experimental experimental groups of preschool

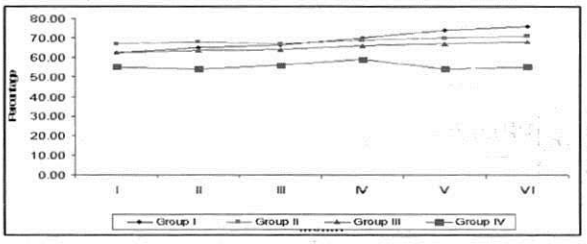

Fig. 1.4 A Ascorbic acid intake of different groups of preschool children

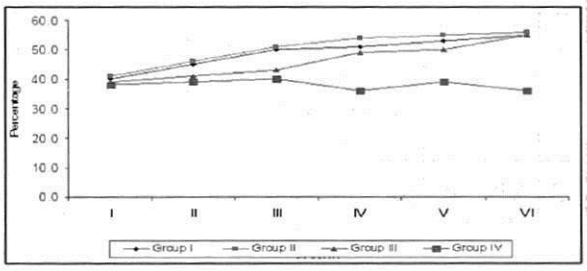

Fig. 1.5 β carotene intake of different experimental groups of preschool children

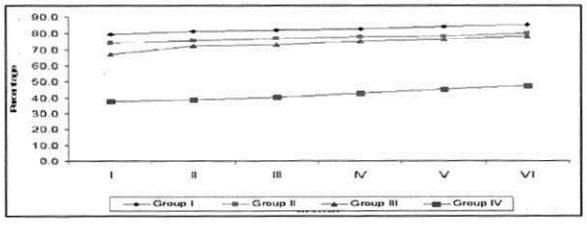

Table No.1 Average Nutrients Intake of Experimental Groups

1	Vitamin B(mg)	0.65±0.1(78.7)	0.60±0.1(76.5)	0.54±0.1(72.0)	0.31±0.1(41.3)
2	VitaminB 2(mg)	0.63±0.1(72.9)	0.61±0.1(71.8)	0.62±0.1(72.9)	0.33±0.07(38.8)
3	Vitamin B(mg)	0.62±0.1(65.3)	0.61±0.1(63.0)	0.60±0.1(62.0)	0.40±0.9(42.0)
4	Vitamin C(mg)	27.2±1.7(68.0)	27.2±1.5(68.0)	25.8±0.9(62.5)	22.4±1.4(56.0)
5	β Caroten(µg)	1128±14.1(70.5)	1176±8.5(73.5)	1080±7.3(67.5)	757.1±7.9(47.3)

Group I -
Experimental group with supplementation of soyaladoo.

Group II -
Experimental group with supplementation of soyachakali.

Group II -
Experimental group with supplementation of soyaflakes chiwada .

Group IV -
No supplementation i.e. control group.

Figures in parentheses indicate percentage.

Table No 2 : Average Vitamins Intake of Experimental Groups with their before and after Supplementation

Sr. No.	Vitamins	Group I Mean ± S.D.			Group II Mean ± S.D.			Group III Mean ± S.D.			Group IV Mean ± S.D.		
		BS	AS	't' value	BS	AS	't' value	BS	AS	't' value	BS	After 6months	't' value
1	Vitamin B1(mg)	0.4± 0.1 (58.7)	0.7± 0.1 (78.0)	3.8 **	0.4± 0.1 (57.6)	0.7± 0.1 (76.0)	3.2 **	0.4± 0.1 (58.7)	0.5± 0.1 (69.3)	2.7 *	0.3± 0.0 (41.3)	0.4± 0.1 (58.7)	2.7 *
2	Vitamin B2 (mg)	0.6± 0.1 (64.7)	0.7± 0.1 (74.0)	3.1 **	0.5± 0.1 (63.5)	0.6± 0.1 (71.8)	2.8*	0.5± 0.1 (60.0)	0.6± 0.1 (73.9)	2.6*	0.3± 0.1 (38.8)	0.3± 0.1 (40.0)	1.3 NS
3	Vitamin B(mg)	0.4± 0.1 (44.2)	0.6± 0.1 (65.3)	2.7 *	0.4± 0.1 (42.0)	0.6± 0.1 (64.2)	3.4 **	0.4± 0.1 (41.0)	0.6± 0.1 (63.1)	3.5 **	0.4± 0.1 (42.1)	0.4± 0.1 (42.1)	0.0 NS
4	Vitamin C(mg)	27.2± 3.7 (68.1)	27.2± 3.7 (68.1)	0.0 NS	27.0± 3.7 (67.5)	27.2± 3.7 (68.0)	0.70 NS	24.3± 3.3 (60.8)	25.8± 3.5 (64.5)	0.12 NS	22.0± 3.0 (55.0)	22.04± 3.0 (55.1)	0.10 NS
5	ß Carotene (µg)	500± 3.7 (31.3)	1128± 15.0 (78.5)	6.1 **	576± 6.7 (36.0)	1176± 16.6 (73.5)	3.9 **	326± 14.5 (20.4)	1080± 14.5 (67.5)	4.2 **	326± 4.5 (20.4)	757.1± 10.4 (47.3)	2.8 **

GroupI-
Experimental group with supplementation of soyaladoo.

Group II -
Experimental group with supplementation of soyachakali.

Group II -
Experimental group with supplementation of soyaflakes chiwada.

Group IV -
No supplementation i.e. control group.

Figures in paran theses indicate percentage.
* significant at 5 per cent level
** significant at 1 per cent level
NS Non Significant,
BS – Before supplementation,
AS – After supplementation
Average Vitamins Intake of Experimental Groups with Their Before and After Supplementation.

References :

Amerine, M.A., Pangborn, R.M. and Roessler, E.B. (1965) Principles of Sensory Evaluation of Food. Academic Press, New York.

AOAC Approved methods of analysis 14th edn association of official analytical chemist washington D.C. (1984)

Ghatge N. S.(2012):"Food Intake Pattern of Malnourished preschool children after supplementation of soyaldoo" I Res.J. Social Sci. 1(3), 36-40.

Ghatge N.S (2013) "Supplementation of Nutraceutical Food To Malnourished Preschool Children and its Impact on Biochemical Examination" R.J.C.C.S vol 1 (1) 2-6.

Gomez, K.A. and Gomez, A.A. (1984) Statistical procedures for agricultural research, Willey International John Willey and Sons, New York.

Kaushik, A. and Jaiswal, M., (2010) A study on effect of soyaflour on post menopausal problems women of Gorakhpur District." A Paper presented at national seminar, at Lulknow(U.P.) on 23-24 oct :2 RJFCCS 1(1)

Messina; M. J. (1997) "Soyfood their role in disease prevention and treatment in Liu Keshun." Editor Soybean chemistry. Technolog and utilization Chapman and Hall, New York: 443- 447.

Raghunramula, N., Nair, K.M. and Kulyansundram, S., (1983) ; "Annual Laboratory techniques."; National Institute of Nutrition, Hydrabad.

Thangamms, Phillips, (1971); *"Handbook of Indian works", Kalyani Bool, New Delhi Ed(1).*

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