



FOOD AND NUTRITION NEWS

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Carotenoid and Tocopherol Retention in Food Products Using Red Palm Oil

Red palm oil (RPO) (*Elaeis guineensis*) is the unrefined unbleached Palm Oil in crude form and has unique physico-chemical properties. It is a highly viscous semi solid fat and is deep orange red in colour. The colour of RPO is primarily due to low molecular weight carotenoid pigments. RPO is a complex mixture of glycerides (over 99%) and non-glyceride materials also referred as unsaponifiable matter includes carotenoids, tocopherols, phospholipids and sterols. RPO is the only vegetable oil which contains carotenes. The total carotenoid content in RPO produced in India range from 540-700 ppm. Of the total carotenes the major types are α -carotene (29%) and β -carotene (62%). β -carotene is the most active form and is the most active precursor of vitamin-A. Various other fractions like xanthophylls (4.6%) and lycopenes (2-3%) are also present. Further RPO also contains significant amounts of tocopherols and tocotrienols compared to many other commonly used vegetable oils. Both tocopherols and tocotrienols act as potent antioxidants, protecting the unsaturated fatty acids, phospholipids and vitamin-A present in foods, as well as in bio-logical systems. The total tocopherol in RPO is 270-800

ppm, which includes α -tocopherol (20%), β -tocotrienol (25%), γ -tocotrienol (45%) and δ -tocopherol (10%). One gram of RPO provides 210-460 IU of Vitamin E, equivalent to 160 ppm of tocopherol.

The fatty acid composition of RPO contains 46% saturated fatty acids, 43% mono unsaturated fatty acids and 11% poly-unsaturated fatty acids. The ideal fatty acid composition along with carotenoids and tocopherols make RPO a nutritionally balanced Vegetable oil. Recent studies carried out at this centre to understand the stability

of carotenes and tocopherols in food preparation, gave valuable information. Oil blends using red palm oil and sunflower oil (RPO:SFO) and red palm oil and groundnut oil (RPO:GNO) in the ratio of 30:70 were prepared and used in the preparation of various food items namely pickles, baked foods, sweet snacks and fried foods.

The total carotene, β -carotene and total tocopherol retention in the above preparations, varied depending on the period of storage. Pickles (stored for six months) retained 48-66% total

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Frequency of Fish Consumption Regulates Serum Lipid Profile

A study conducted in 300 respondents in coastal town of Kakinada, Andhra Pradesh has revealed lower level of total cholesterol, triglycerides, VLDL cholesterol in serum among fish eaters at higher frequency rates than at lower frequency rates irrespective of income groups (Low, Middle and high). Higher values of LDL cholesterol was found in the low frequency fish consumers than high

frequency fish consumers. This shows that the higher frequency intake of marine fish has a beneficial role in altering the serum lipid fractions. More than income, frequency of fish consumption is the major factor in regulating the lipid fractions in serum.

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Food and Nutrition Situation in Rural Families in Seven Agro-Climatic Zones of Andhra Pradesh

Nutritional status of women and children, nutritional knowledge and attitudes of women in 700 rural families in Seven Agro-Climatic zones covering large, medium, small farmers and landless families in Andhra Pradesh was studied. The seven zones covered were Krishna-Godavari, North Coastal, Southern, Northern Telangana, Southern Telangana, Scarce rainfall and High altitude and Tribal areas.

The results showed that the consumption of cereals, pulses was normal but the intakes of protective foods like green leafy vegetables, fruits, eggs and meat was below Recommended Dietary Allowances (RDA) in all the zones. Along with these foods, oil/fat intake was also low in Southern Telangana and High altitude and Tribal zones (table). Consequently, the intake of micro

nutrients like riboflavin, B-carotene (Provitamin A) and Iron was very poor. Calcium intake was inadequate in tribal zone.

Anthropometric indices like body mass index BMI (Wt/Ht^2) of adult women and school age boys and girls in all the zones were normal and were comparable to reference BMI. Contrarily, BMI of adolescent girls in almost all the zones were below the reference standards as per anthropometric data nutritional status of pre-school children revealed, mild (grade I) malnutrition in 28.54%, moderate (grade II) in 8.44% and severe (grade III) in 1-6% of the pre-school children. Clinical manifestations of anaemia and riboflavin deficiency were commonly found in women, adolescent girls and school age children in all the zones. Incidence of vitamin A deficiency in

school age children (6-11 Yrs.) was seen in North Coastal, Northern Telangana and Scarce Rainfall zones.

Nutritional knowledge of women except in Krishna-Godavari zone and Southern zone, was very low in all other zones surveyed. The same trend was also seen with respect to attitudes of women towards nutritional practices.

Compared to large and medium farm families, the food intake and subsequent nutritional status of small farm families and landless families was very poor.

G. Sarojini
Anurag Chaturvedi
N. Lakshmi Devi
P. Padmavathi

Table : Mean food intake per consumption unit (pcu/day) in seven zones.

Foods	Zones							RDI (ICMR 1990)
	Krishna Godavari	North Coastal	Southern	Northern Telangana	Southern Telangana	Scarce rainfall	High altitude & tribal area	
Cereals	380 ± 77	415 ± 94	542 ± 158	487 ± 191	519 ± 125	367 ± 114	541 ± 154	460
Millets	---	8 ± 16	14 ± 10	73 ± 93	68 ± 111	34 ± 64	42 ± 79	---
Pulses	34 ± 31	22 ± 16	32 ± 26	27 ± 35	36 ± 27	51 ± 32	15 ± 16	60
Green leafy Vegetables	12 ± 26	10 ± 20	8 ± 23	12 ± 27	33 ± 46	34 ± 11	32 ± 21	40
Root Veg.	37 ± 27	41 ± 39	21 ± 20	33 ± 46	35 ± 56	23 ± 27	33 ± 37	50
Other Veg.	68 ± 63	43 ± 39	64 ± 59	115 ± 97	118 ± 67	32 ± 41	142 ± 127	60
Fruits	2 ± 6	5 ± 8	7 ± 9	25 ± 27	---	1 ± 3	---	30
Milk & milk products	227 ± 100	135 ± 67	115 ± 68	136 ± 84	50 ± 89	160 ± 96	22 ± 36	150
Egg.	5 ± 13	6 ± 15	1 ± 4	16 ± 28	3 ± 5	2 ± 8	2 ± 4	30
Meat/poultry/ Fish	2 ± 9	22 ± 35	14 ± 34	29 ± 37	4 ± 18	3 ± 9	5 ± 17	30
Oil/fat	24 ± 11	21 ± 8	20 ± 10	19 ± 18	29 ± 12	10 ± 5	12 ± 6	20
Sugar/jaggery	25 ± 18	22 ± 15	24 ± 17	25 ± 12	28 ± 16	12 ± 5	25 ± 22	30

Grain Legumes - Variability in Phytic Acid Content

Phytic acid accounts for about 80 percent of the total phosphorus in most legume seeds. The phytate content of legumes varies from 0.40 to 2.0% depending upon the species and the variety and most of it is present in the outer aleurone layer, the cotyledons or the endosperm. Complexing between phytate and proteins has been reported for several cereals and legumes and this might affect the protein digestibility and bio-availability. Phytic acid content of different genotypes of pulses had shown that phytic acid content and IVPD values differed significantly among pulses and also with in the species. Phytic acid content (mg/g) was the highest in soyabean (36.4) followed by

blackgram (13.7), redgram (12.7), green gram (12.0) and bengal gram (9.6). In vitro protein digestibility (IVPD) of redgram and bengalgram genotypes varied from 60.4-74.4 and 65.3-79.4% respectively. The IVPD values of genotypes of greengram, blackgram, and soyabean ranged from 67.2-72.2%, 55.7-63.3% and 62.7-71.6% respectively. There was a significant negative correlation between phytic acid and IVPD of these genotypes. Genotypes of pulses with low phytic acid content could be identified and used in breeding programmes to improve their nutritive value and utilization.

Umachitra
V. Vimala

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carotene, 62-66% B-carotene and 76% tocopherol. Baked foods like cakes (stored for 4-5 days) retained 73-84% total carotenoids, 73-85% B-carotene and 84-87% tocopherol. Biscuits stored for 3 weeks retained 71-81%. Diet total carotenoids, 61-81%, B-carotene and 51-60% tocopherol. Sweet snacks (stored upto 1 week) retained 60-79% total carotenoids, 76-85% B-carotene and 62-79% tocopherols. Retention of total carotene content in deep fried foods was around 60% and of tocopherol was 50% and this indicates that RPO or its blends are not suitable for deep frying.

G. Sarojini
K.N. Bhavani
L. Radha

At Centre of Advanced Studies - Foods & Nutrition Valedictory Function of Short Course

Under the centre of advance studies a short course on "Recent Advances in Therapeutic Nutrition" was organised from 1st February to 20th February at P.G. and Research Centre, Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad.

Seven participants of the cadre of Assistant Professors and Associate Professors from Punjab Agricultural University, Ludiana, University of Agricultural Sciences, Dharwad; Tamil Nadu Agricultural University, Madurai; Andhra Pradesh Agricultural University, Hyderabad; Osmania University, Hyderabad have attended the course.

The Valedictory function of the course was held on 19th February 1996.

Dr. Vijaya Khader, Director of Centre of Advanced Studies, Professor and Head Department of Foods and Nutrition welcomed the gathering. Dr. Vimala, Coordinator of the course presented a brief report on the proceedings of the short course

which was followed by participants remarks. The participants felt that the course was very useful and covered comprehensively all the recent developments.

Dr. M.V. Rao Vice-Chancellor, Andhra Pradesh Agricultural University, Hyderabad delivered the

valedictory address, highlighting the importance of role of nutrition in prevention and cure of disease. He commended the staff of department of Foods and Nutrition for organising this short course to improve the expertise of staff of State Agri-

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**Development of Preservation Techniques for Palmyrah
(*Borassus flabellifer*) Fruit Sections**

Preservation techniques were developed for tender palmyrah fruit sections to enhance the shelf life using

- a) different sugar syrups of 50° Brix and 70° Brix and candy preparation.
- b) Honey 40° Brix and 80° Brix
- c) Sugar syrup 50° Brix with Potassium metabisulfite and Sodium Benzoate.
- d) At room temperature (37-40°)
- e) In the refrigerator (4-6° C) and
- f) Dehydration.

Findings revealed that fruit sections could be stored at room temperature only for 12 hours and at refrigeration temperature for 8 days. Dehydrated products were found better in acceptability followed by candy.

Shelf life was good both for dehydrated product and candy compared to other methods. Combining chemical preservatives with sugar syrup was found better in increasing the shelf life and acceptability.

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cultural Universities. He then awarded the certificates.

Dr. M. Sugunakar Reddy, Dean of Home Science in his presidential address stressed the need for such short courses and motivated the faculty to organise many more in the future.

At the end, Dr. Uma Reddy Coordinator of the course proposed vote of thanks.

K. Radhika Rani
Vijaya Khader

ANNOUNCEMENT

A short course on "Assessment of Nutritional status" will be held from 8th to 27th July 1996, by the Centre of Advanced studies, Department of Foods & Nutrition, Post graduate and Research Centre, College of Home Science, A.P. Agricultural University, Hyderabad. Free boarding and lodging will be provided. Nominations of trainees from State Agricultural University Teachers may be sent to

The Director
Centre of Advanced Studies,
Postgraduate and Research Centre
A.P. Agricultural University
Rajendranagar, 500 030.

Last date for receipt of Nominations : 1-6-1996

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