

OIL TECHNOLOGISTS' ASSOCIATION OF INDIA

April - July 2011

EASTERN REGION



OTA

FOR LIMITED CIRCULATION



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From the President's Desk

Taste buds tickle very easily with the sight of Fast foods and the taste that provide instant gastronomical delights compared to traditional routine HEALTHY and NUTRITIOUS food. Abundance of theoretical knowledge in closed classrooms of schools and colleges is provided to students about the harmful effects of Fastfood but are exposed to tempting fastfoods in the canteens in the close proximity of the academic institutions. In the West many countries have initiated measures to ban sale on Fast Food ,Soft drinks etc within the school premises after their continued research and its adverse effects .of this "JunkFood".

Surprisingly, the term "Junk Food " is not defined under the Prevention of Food Adulteration Act 1954. In the present context with the changing scenario it will be under the Food safety authority of India under the Health Ministry. Vegetable Rolls, Mutton Rolls, dip fried mostly in vanaspati, Pakoras, Burgers, and soft drinks may be unavallable within the easy reach of the students in the premises of the academic Institutions if the orders of the Ministry is implemented in its letter and spirit.

An affidavit has been filed in the Delhi High court recently by the Food safety standards Authority of India (FSSAI) under the Health Ministry. The union Health Minister has written to the state Health Minister to consider the withdrwal of carbonated beverages and junk food from school and college canteens. The court has asked the Centre regarding the steps it has taken to create awareness among the younger generation about the harmful effects of increased consumption of junk food.

In order to increase awareness and follow up restriction on Fast food, the health Ministry has quoted medical researches to say "Junk food is high in calories, fat, sodium and sugar, contains harmful additives and colour to enhance flavour and is of no use as it lacks vitamins, minerals, fibre etc". While scholars in schools and colleges are taught in classrooms about good nutrition on the other hand we continue to make Junk food available to them.

The court is hearing a PIL filed by a NGO seeking ban on the sale of Junk food and carbonated drinks within 1500 feet radius of schools. Let us await the verdict but in the meantime what is needed is verdict of AWARENESS and constant COMMUNICATION mechanism through the MEDIA highlighting the adverse effects of fast food..

Gov't may play a very major role to combat this damaging effects of increased consumption of fast food

S.K.Roy
President

Ack : N.T. July

[TO BE PUBLISHED IN THE GAZETTE OF INDIA, EXTRAORDINARY, PART-II, SECTION I]

GOVERNMENT OF INDIA
Ministry of Health and Family Welfare
(Department of Health and Family Welfare)

New Delhi, Dated 4th August, 2011

NOTIFICATION

F. No. P-15025 / 41 / 2011-DFQC – In exercise of powers conferred by sub-section (1) of section 97 of the Food Safety and Standards Act, 2006 (34 of 2006), the Central Government hereby repeals the enactment and orders in the Second Schedule of the Food Safety and Standards Act, 2006 and the Milk and Milk Products Regulation, 1992, with effect from 5th August, 2011.

(F. No. P-15025 / 41 / 2011-DFQC)

ARUN PANDA
Joint Secretary to the Govt. of India

Salient features of Food Safety and Standards Rules, 2011 (FSS Rules)

- FSS Rules shall come into force after 3 months from the date of their publication i.e. will come in effect on 5.8. 2011.

The Food Safety and Standards Rules, 2011 has been broadly divided into three chapters :

Chapter 1 – Definitions clause

Chapter 2 – Deals with the Enforcement structure and procedures

Chapter 3 – Deals with the Adjudication Process and Appeal to Tribunal

The FSS Rules, 2011 interalia deals with the procedure and manner of seizing, the following :

- Food Articles
- Documents
- Sampling & Analysis by the FSO

CHAPTER 2 : ENFORCEMENT – STRUCTURE & PROCEDURE

Enforcement is being dealt in Chapter 7 of the FSS Act, 2006. The duty has been caste upon food authority and state food authorities for the enforcement monitoring verification under law of the Food business, the various enforcement officers who are responsible for the administration of the regulations / orders / provisions of the Act are :

1. Food Safety Officers (FSO)	(operate in local areas appointed by Commissioner of Food Safety – Section 37 – Rule 2.1.3)
2. Designated Officer (DO)	(Sub-Divisional Officer, BSc., one in every District appointed by Commissioner of Food Safety – Section 36 – Rule 2.1.2)
3. Commissioner of Food Safety	(Commissioner of Secretary to State Government–Section 30 – Rule 2.1.1)
4. Food Analyst	(appointed by Commissioner of Food Safety for local areas – Section 45 – Rule 2.1.4)

Procedure of taking extracts of documents : (Rule 2.2)

FSO may **seize** [u/s-38(6) FSSA] any books of accounts or other documents in possession / control of manufacturer or distributor or dealer useful or relevant to any investigation & **return back** the same within **30 days** but may take copies of the true extracts and each page of such extracts to be initialed by taking an affidavit certifying the authenticity of the extracts or copies.

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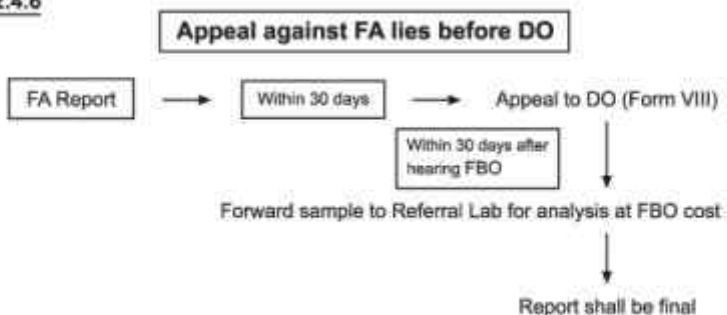
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-
- Sample to be collected in clean dry
 - * Bottle / Jar / suitable container which can be closed a tightly sealed.
 - Sealed container to be labeled & bear
 - * Code number.
 - * Sender's name.
 - * Date & Place.
 - * Nature of article.
 - * Nature and quality of preservative, if added
 - 4 Samples to be collected - Thumb impression / sign of person from whom sample collected.
 - * On Refusal - T. I. / Sign of witness

4 Samples to be sent as follows in specified quantity as per regulation (& even otherwise quantity shall be sufficient unless FA reports to the contrary).

- 1st Form VI to FA
- 2nd & 3rd Form VI to DO
- 4th Form VI to Accredited Lab, if required by FBO otherwise to DO.

Rule 2.4.6



Rule 2.5

Nomination by Co.

Co. to inform Licensing Authority in Form IX about **Person-in-charge** of Establishment / unit & the subsequent change in **Person-in-charge**.

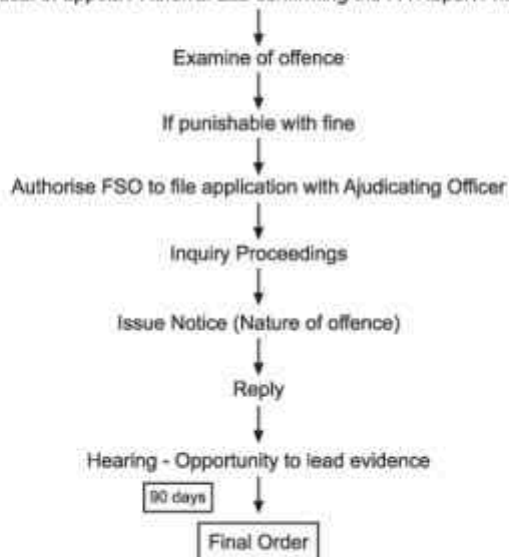
CHAPTER 3

Adjudication & Appeal

Rule 3.1.1

Holding inquiry

Do on dismissal of appeal / Referral Lab confirming the FA Report / no appeal filed



Rule 3.1.2.

Order of Adjudicating Officer

Order (to be reasoned and mention provision of Act violated) to be sent to the person against whom enquiry conducted & FSO.

Rule 3.2.

Appellate Tribunal

Presiding Officer to be District Judge - appointed for 5 years or until he attains 65 years.

Rule 3.3.

Appeal Procedure

Order (Adjudicating Officer)

Within 30 days of receipt

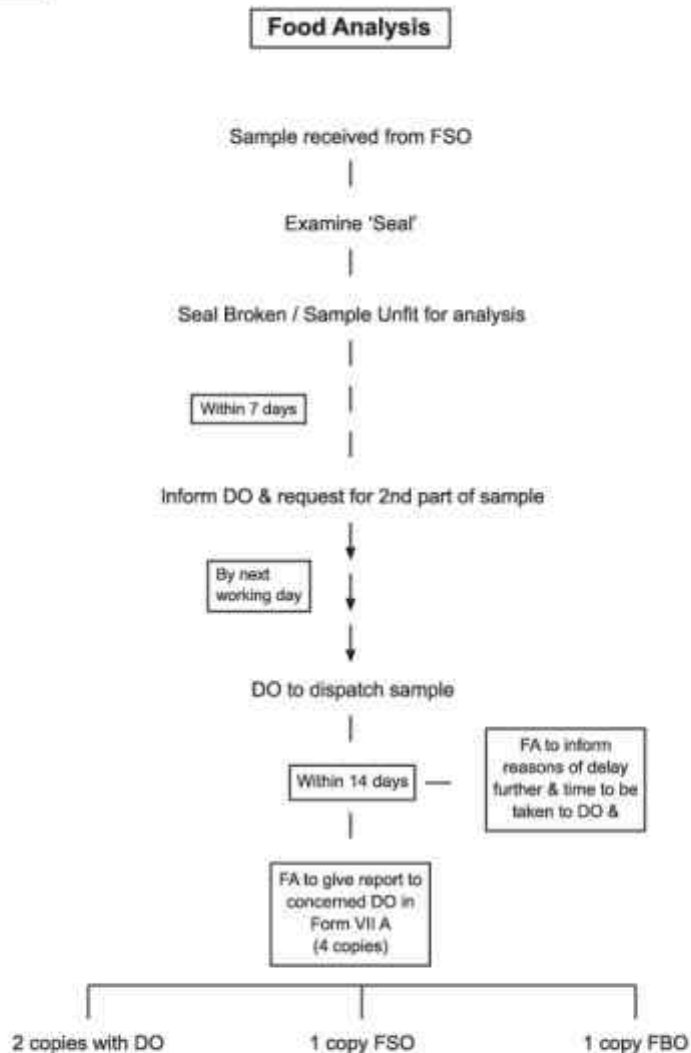
APPEAL (Form X) - Triplicate

REPLY within 30 days of service by Respondent

Fee Structure for filling Appeal

Sl. No.	Amount of penalty imposed	Amount of fee payable
1.	Less than Rupees 10,000/-	Rs. 500/-
2.	Rupees Ten thousand or more but less than - Rupees one lakh	Rs. 1,500/-
3.	Rupees one lakh or more	Rs. 1500/- plus Rupees 500/- for every additional one lakh of penalty or fraction thereof subject to a maximum of Rs. 5,000/-

Rule 2, 4, 2



2010 - 11 : The Year of Record Crop for India

Output rises 10.6% to record 241.8 mt; Oilseeds up at 31 mt

Spurred by attractive prices, India's farmers produced record grain in the just-concluded 2010-11 farm year, even as the world struggled with shortages. The country produced record 242 million tonne of foodgrain in 2010-11 farm season (July-June), the fourth advance estimates released on Tuesday showed. Foodgrains comprise rice, wheat, coarse cereals and pulses. In 2009-10, the total farm output was 218 million tonne as compared to 234 million tonne in the year before. However, sustaining the record output may be difficult this year because of the poor rainfall in July may affect sowing and eventually the output. By mid-July, the country had received 3% below normal rainfall with 13 meteorological departments reporting a deficit. The record foodgrain output was largely because of a sharp rise in production of wheat to 86 million tonne against 81 million tonne in the year before. The record output only proves that the sustained focus on foodgrains and pulses in recent years by the Centre has paid off rich dividends," said P. K. Joshi, senior programme manager, IFPRI.

The production of pulses and oilseeds, two key consumption items India is not able to produce enough, also hit a record high. "We can easily produce 20 million tonnes of pulses by bringing fallow land under cultivation and also through inter-cropping system... I do not think we have to import pulses after 3-4 years," Agriculture Secretary P. K. Basu told reporters here after releasing the data. The sharp increase in minimum support prices, or MSP, for a number of crops has allowed farmers to apply more inputs to their crop, helping lift output across crops. The MSP for pulses was raised up to ₹ 700 per quintal before the cropping season last year. In the case of some pulses, the increase over 20%. The record high oilseeds production of 31 mt will also help cut India's vegetable oil imports by about a million tonne. India had imported 9.2 million tonne of vegetable oil last year to meet the domestic shortfall. Experts have urged the government to allow larger exports to help farmers get higher prices. Earlier this month, India allowed export of one million tonne of non-basmati rice and two million tonne of wheat after a gap of nearly four years. As on July 1, the Food Corporation of India had over 64 million tonne in stock, much more the buffer norm.

"Slow and inefficient trade policy-making has hampered any possible advantage that the farmer can get from higher international prices and that could incentivise a switchover to commercial crops," said another farm expert with an international organization. The comfortable foodgrain stocks has kept a check on prices of cereals, but the rising demand for vegetables, milk and fruits had kept overall food inflation high. Inflation in food articles has dropped to 8.31% at the beginning of July from over 20% at the beginning of the year. India will need to step up foodgrain production, which remains comfortable as of now, to over 280 million tonnes by 2020 to meet the demand from a rising population. Evidence suggests that per capita consumption of cereals has steadily declined, but a higher population will require more grain in absolute terms. Higher productivity in cereals is also needed so that more land is available for farm produce that is seeing rising demand, such as fruits and vegetables. "There is virtually no post harvest focus either for foodgrains or for high value produce including fruits and vegetables, dairy etc. where demand is growing at a much faster rate and when impact food inflation far more perceptibly," said Joshi."

Contributor : S. K. Ray

Ack : E. T. July / 11

Genetic Mismatch of Modern Diet and “Diseases of Civilization”

Dr. D. P. Sen, Former Scientist
Central Food Technological Research (CSIR), Mysore

ABSTRACT

From the stage of hunter-gatherer (HG) to modern civilization best exemplified by the USA (America), man (*Homo sapiens*) has made a long journey of time since its evolution on the earth some 0.3 - 0.2 million years ago (mya). During this period culture which includes diet of a modern civilized man has changed beyond recognition. But the genome of a man responsible for its health and nutrition has hardly changed. Human body expects to be nourished by certain molecules within genetically determined ranges, which have remained unaltered through generations. This has resulted in a mismatch between present day diet of civilization and the genome. This acts as a promoter of many chronic illnesses such as atherosclerosis, hypertension, stroke, type 2 diabetes mellitus, arthritis, obesity, cancer and many others. These disease are the results of interaction between genetically controlled biochemical processes and myriads of bi-cultural influences which include foods, processed foods and nutrition.

Introduction :

It is widely accepted that human species (*Homo sapiens*) came into existence on earth by an evolutionary process about 0.3 - 0.2 million years ago (mya) from *Homo erectus* (1.8 - 0.5 mya). Immediate predecessor of *H. erectus* was *H. habilis* (2.4 - 1.4 mya).

A man is an omnivore. However, it retains all the structural and anatomical features of a herbivore/frugivore higher primate gut departing in important way from typical gut of top carnivores.

Diet of our hunter-gatherer (HG) ancestors has remained relatively stable over thousands of years. Historically, it provided a diet balanced in high leverage metabolic functions, favoured health and allowed our ancestors to thrive, reproduce and pass their genes to subsequent generations. But modern diet best exemplified by the diet of the USA (America) has changed beyond recognition. This radical change occurred very rapidly in about 250 years (7-8 generations) and did not allow sufficient time for genetic adaptation. The genetic mismatch of modern diet of civilization acted as a promoter of many chronic metabolic diseases of present day population of America, a highly developed country of the world. These diseases are : atherosclerosis, hypertension, type-2 diabetes mellitus, obesity, cancer of colon, breast and prostate, arthritis and many others. This discordance was proposed by Eaton and his associates (1, 2, 3). The present article discusses dysregulations and metabolic diseases due to modern diet.

Till the introduction of agriculture the diet of HG men consisted of various combinations of fruits, vegetables, nuts, roots, legumes, honey, game-animals (including brain, organs and bone-marrow), insects and larvae.

Paleolithic human had high energy input (2500 Cal/day) and had a 65:35 plants : animal subsistence base. They ordinarily obtained 45-50 percent of their energy from

carbo-hydrate, 30-35 percent from fat and the balance from protein. Their diet had high levels of vitamins, minerals (excepting sodium), non-nutrient phytochemicals and natural antioxidants. Sodium intake and sodium/potassium ratio were found to be low and ratio less than one in HG diets. HG men were healthy, muscular, robust and apparently without any metabolic diseases.

Landmarks in advancement of food production and processing:

Cooking with fire was the first major innovation in the direction of food processing. It started about 0.25 mya or perhaps earlier. Second major change in human dietary pattern occurred about 10000 years ago (about 300 generations) with agricultural revolution. More recently, about 250 years ago (7 - 8 generations), industrial revolution heralded another major change in our diet with the onset of advanced food processing, crop manipulation and intense animal rearing practices. These radically changed the quantitative and qualitative balance in different nutrients or components of diets of populations of a highly developed country such as America.

Diet of America (Modern Civilization):

The diet of America has been selected because it is a highly developed country and is considered as the best example of modern civilization. It has a network of industries for ready-to-serve food products and food preparations (pizza, burger, potato chips, yeast bread, ready-to-eat cereals, cheese, pasta, sausage, chicken / beef mixed dishes, soft and hard drinks and many others). These industries have taken over functions of household kitchens which are now almost redundant in America. The above preparations in their turn are based on "traditional" food products such as refined grains, flour, sugar, edible vegetable oils, edible hydrogenated vegetable oils or *trans* fat, common salt etc.

Secondly, those of England and other countries of Europe who colonized America had a clean slate (with no backward pull of traditions) to start. This also helped the population of America to develop its present dietary practices rapidly.

Upper stratum of different developing countries of the world is switching over to American diet, rejecting their own traditional dietary preparations, not on the basis of better nutritional qualities but from the standpoint of status and convenience.

Lastly and also importantly, America has a highly developed system to record not only the status of health and nutrition of its population but also all the scientific informations on their foods and food preparations.

There is no standard American diet; it varies to an extent by region, culture, educational level and personal preference. However, based on certain common features, Ramsden (4) gives the per capita US daily consumption of macronutrients (Table - 1). The diet provides 2100 Calories from 78.3g (33.6 percent of energy) fat, 275g (50.4 percent of energy) carbohydrate and 84g (16 percent of energy) protein.

Vitamins, macro and micro-elements, antioxidants, phytochemicals are also provided by the diet.

Additionally, it is probably that 40000 chemicals enter American foods from pesticides, fertilizers, food additives and packaging materials. These have toxic effect to health but specific information are lacking (4).

Diets of Modern Civilisation, HG ancestors and RDA :

United States Department of Agriculture and U.S. Department of Health and Human Service in "Dietary Guidelines for Americans 2010" (5) have observed that American do not eat enough of nutritious foods (such as whole grains, fruits, vegetables, seafoods, fiber, potassium, vitamin D, calcium, dairy and oil); on the other hand, they eat too much of added sugar, solid fat, refined grains, sodium and saturated fat (Fig. 1).

Unfortunately, the above guideline (5) does not recognize the importance of molecular structure of a fat *vis a vis* its specific nutritional quality or metabolic dys regulation.

Paleolithic intake of many nutrients (vitamins) and current or recommended intakes (Table-2) show that our HG ancestors used to take a few times more (on energy basis, about three times). So is the case with many minerals excepting sodium. Paleolithic intake of sodium (i.e. sodium chloride) is much less than the current intake.

Widely agreed qualitative difference between HG diets and contemporary Western diet indicates that the former is far superior to latter (Table - 3). (a) Our HG ancestors used to take twice as much fruits and vegetables as a contemporary Western man. Thus, our forefathers had twice as much antioxidants, phytochemicals, vitamins and micro-elements. (b) Contemporary Western diet has more of (w-6) fat compared to (w-3) fat $\{(w-6) : (w-3) > 1\}$; reverse is the case with the diet of our HG ancestors $(w-6 : w-3 < 1)$. (c) Low value of NA/K (< 1) observed in the diet of our HG ancestors is simply reversed in the diet of a contemporary modern diet $(Na/K > 1)$.

Game animals of Paleolithic period provided mankind far superior quality meat compared to meat of present day animals. Diet of wild animals consisted of variety of grasses, flowers, moss, seeds, cloves etc. The wild animals had to travel long distance to find food. By contrast, present day animals which provide us meat are reared in captivity, are corn-fed or given formulated feed.

As a result, compared to wild game of HG period, present day farm animals provide us meat with (a) high fat content (b) high saturated fat, particularly, C14 and C16 fatty acids, (c) low MUFA, (d) high LA content and (e) low (w-3) / w-6 PUFA ratio.

Diet-related Diseases of Civilization :

Despite America having a highly developed diet, quantitatively with sufficient amounts of protein, fat and carbohydrate, the country has a heavy toll of diet related chronic diseases. According to "Dietary Guidelines for Americans 2010" (5) these are (a) cardiovascular disease (b) hypertension (c) type 2 diabetes (d) osteoporosis (e) overweight and obesity and (f) cancer. According to above guidelines (5), huge number of population of America are afflicted with above diseases.

(a) Cardiovascular Disease : "About 81.1 million American or 37 percent of the population have the disease.

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- (b) Hypertension : 74.5 million Americans or 94 percent of the adult population have hypertension.
 - (c) Type 2 Diabetes Mellitus : Nearly 24 million American – almost 11 percent of the population – age 20 years and older have diabetes. The vast majority of cases are type 2 diabetes.
 - (d) Osteoporosis : One out of every two women and one in every four men aged 50 years and older will have an osteoporosis-related fracture in their lifetime. 20 percent of Americans have arthritis.
 - (e) Overweight and obesity : In 2009, 24 percent of American adults were obese as against 15 percent in 1970. Even the children are having obesity. It is on increase.
 - (f) Cancer : Almost one in two men and women – approximately 41 percent of the American population – will be diagnosed with cancer during their lifetime. Breast, colon and prostate cancers are particularly diet-related.

Dysregulations involved in above diseases are slow acting at the initial stage. Clinical symptoms become apparent only after a long time which may be a decade in some cases.

More about "Diseases of Civilization" :

Many nutrients and non-nutrients of modern diet, when not in balanced amount, bring about many cellular and physiologic dysfunction. Again, many of these when present in balance amount promote health. More important ones are outlined here.

- (a) **Eicosanoids** : Eicosanoids from (w-3) alpha linolenic acid (ALA) are beneficial to health-anti-thrombotic (TXA₂), anti-inflammatory (LTB₄ and PGE₂), anti-arthritic (LTB₄ and PGE₂) and anti-carcinogenic (PGE₂). Those from (w-6) linoleic acid (LA) ie TXA₂, PGE₂ and LTB₄ have just the opposite effect (Fig.2).
- (b) **(w-6) LA and (w-3) ALA** : Almost all the edible vegetable oils of America and its diet are highly rich in (w-6) LA. At the sametime, the diet is extremely poor in vegetables and seafoods which provide dietary (w-3) PUFA. High LA and poor ALA and other (w-3) PUFA contents of American diet make it dangerously harmful to its people (Table-4). One of the causes of high incidence of heart disease, heart attack, stroke, arthritis and cancer in America may be due to its diet overloaded with (w-6) LA.
- (c) **Fluidity of cell membrane** : PUFA and MUFA of a cell-membrane make it fluid, an essential requirement for its healthy function while saturated fatty acids (SFA) and *trans* fatty acids (TFA) make it rigid.

One of the causes of hypertension is reduced fluidity of cell-membranes. In health, adequate fluidity of a membrane allows receptors to efficiently bind circulating glucose and insulin and transport glucose inside. In general, the "kinked" structure of natural PUFA and MUFA prevents them from grouping together, thereby, promoting fluidity of membrane and continuous transport and metabolism of glucose. On the otherhand, straight nature of SFA, TFA and cholesterol allows

these to pack tightly together and thereby increasing membrane rigidity and hampering glucose transport and its metabolism. Reduction of membrane fluidity by SFA or TFA may account for correlation between their dietary intake and insulin resistance and diabetes.

- (d) **Serum cholesterol and dietary cholesterol** : Serum cholesterol, more than normal, is associated with coronary heart disease. However, a direct relationship between serum cholesterol and dietary cholesterol is rather dubious. Rather emphases should be on those dietary constituents which promote hypercholesterolemia (e.g. C14, myristic acid, C16 palmitic acid and trans fatty acid). Though LA, (w-6) PUFA reduce serum total cholesterol, it increases oxidized LDL which is highly atherogenic.
- (e) **Anti-oxidants** : In addition to antioxidants, already known and identified both chemically and functionally, human diet should have vast number of unidentified antioxidants having different capacity to transport electron to diverse harmful free-radicals and oxidized products, both generated *in vivo*. Based on the experience of HG ancestors, in absence of any RDA guidelines and till further investigations, an American diet should have more of fruits, nuts, legumes and vegetables. Antioxidant capacity (Table-3) only gives a gross estimate and does not convey the assessment of a specific constituent.
- (f) **Cancer** : Unrestricted cell-growth and replication are features of cancer. Excessive (w-6) LA and ArA intake combined with inadequate (w-3) ALA, EPA and DHA intake promotes the mechanism for the development of cancer.

Epidemiological investigations have demonstrated a strong consistent inverse association between fruit and vegetable consumptions and cancer incidence. This relationship may reflect importance of micro-nutrients and phytochemicals that occur in vegetables and fruits.

- (g) **Phytochemicals** : Whether and to what extent, fruits and vegetables contain non-nutrient phytochemicals has not yet been investigated but it is likely that the concentration of such chemical substances in naturally occurring edible fruits and vegetables may be great. The precise role played by phytochemicals biological response modifier such as flavonols, plant phenols, protease inhibitors, organosulfur compounds and organic isothiocyanates – in disease prevention is not known with certainty, but their positive function in this capacity is the subject matter of current research.
- (h) **Hypertension and dietary common salt** : One of the dietary factors for hypertension among American population or elsewhere is excessive consumption of sodium chloride (4000 mg sodium/day) and insufficient potassium intake. It is necessary that intake should be lowered to 2300 mg. For pre-agricultural humans, who consumed only sodium chloride intrinsic to their foods, essential hypertension would have been vanishingly a rare problem. Overweight and obesity, and excess alcohol consumption also give rise to hypertension.

-
- (i) **Sugar and refined grain flours** : These constitute empty calories, energy devoid of accompanying essential amino acids, vitamins, minerals, antioxidants and possibly phytochemicals as one finds them in fruits and vegetables.
- (j) **Trans fatty acids (TFA)** : Investigations of applied nutrition in recent years have shown that partially hydrogenated vegetable oils (*trans fatty acids*) or vanaspati of India promote many metabolic dysfunctions and ultimately many chronic diseases of civilization. TFA has been banned in many countries, is a suspect in USA and the problem is completely ignored in India. The authority of a country must act on the problem in the interest of public health. Silence on the part of academicians is suicidal.

Conclusion :

Natural diets of our HG ancestors, based on fruits, vegetables, nuts, roots, legumes, game animals, seafoods etc. have sustained them in health and propagation though 0.3 – 0.2 million years, a very long distance of time. But the diet of modern civilization exemplified by America is already showing strains in a span of 250 years (i.e. 7-8 generations). The diet has become the cause of many metabolic disorders. Nutritionalists and other experts are aware of the problem and remedial measures are known and well-documented. But their implementation is not at all easy. In an advanced country like America, industries have taken over the burden of manufacturing finished preparations of a diet and these industries will have to come forward to implement essential dietary change. Also, it is necessary to change both agricultural and animal husbandry practices. More stress should be on quality rather than on quantity. Marketability of a preparation or a product (nutrition vs organoleptic acceptance) may stand in the way.

Reference :

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Fig. - 1 : More of This, Less of That (Ref. - 5)

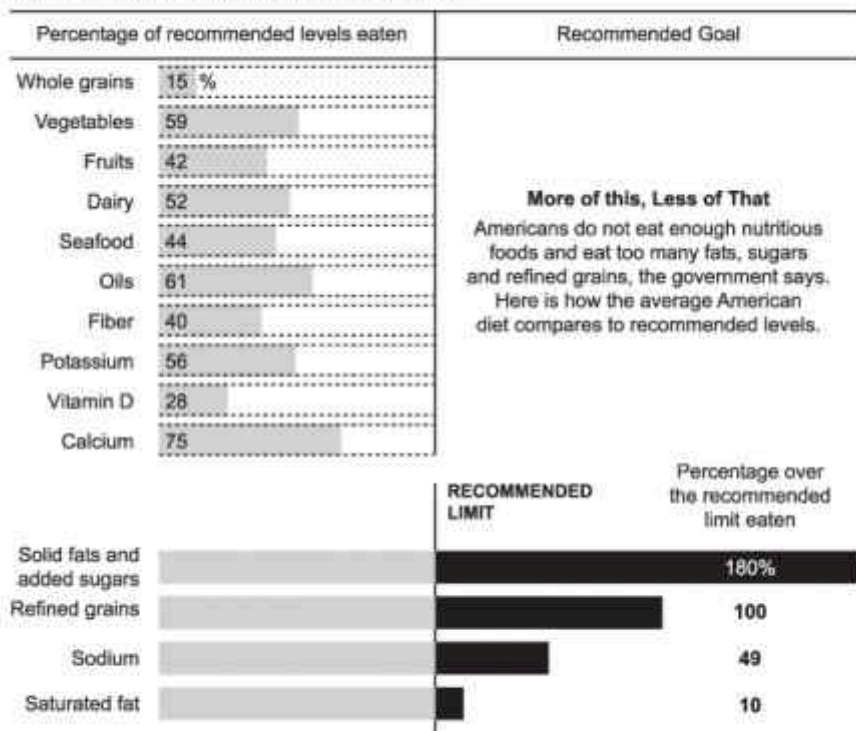
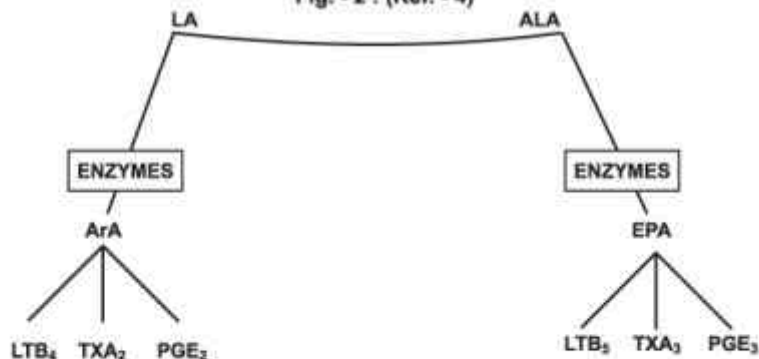


Fig. - 2 : (Ref. - 4)



Dietary ω -6 LA and ω -3 ALA compete for the same enzymes which ultimately convert them to hormone-like mediators known as eicosanoids. In general, eicosanoids derived from ω -6 are pro-inflammatory, while those derived from ω -3 ALA are comparatively anti-inflammatory.

Table-1 (Ref. - 4)

PER CAPITA U. S. DAILY MACRONUTRIENT INTAKE : THE "STANDARD AMERICAN DIET"

Macronutrient	Molecular name (s)	Grams (g)	Calories	% Calories
Total	Fats, Carbohydrates Protein	437 g	2100	100%
Total Fat		78.3 g	705	33.6%
Total Saturated Fats		27.1 g	244	11.6%
18:0	Stearic	7.0 g	63	3.0%
16:0	Palmitic	15.0 g	135	6.4%
14:0	Myristic	2.3 g	20.7	1.0%
12:0	Lauric	0.9 g	8.1	0.4%
10:0 - 4:0	Capric, Caprylic, Caproic, Butyric	1.9 g	17.1	0.8%
Total Monounsaturated		30.4 g	273.6	13.0%
18:1	Oleic	26.5 g	12.2	12.2%
16:1	Palmitoleic* (and other)	1.9 g	17.1	0.8%
Total Polyunsaturated		16.7 g	150.3	7.2%
Total ω - 6				6.55%
20:4 ω - 6	ω - 6 Arachidonate (ArA)	250 mg	2.25	0.11%
18:2 ω - 6	ω - 6 Linoleate (LA)	15.0 g	135	6.4%
Total ω - 3				0.6%
22:6 ω - 3	ω - 3 Docosahexaenoate (DHA)	75 mg	0.68	0.03%
20:5 ω - 3	ω - 3 Eicosapentaenoate (EPA)	45 mg	0.41	0.02%
18:3 ω - 3	ω - 3 Alpha-linolenic (ALA)	1.35 g	12.2	0.58%
Total Trans Fats		4.1 g	36.9	1.8%
118:1, 116:1	Trans Oleic (Elaidic) + Trans Palmitoleic	3.5 g	31.5	1.5%
118:2	Trans Linoleic	0.6 g	5.4	0.3%
Cholesterol		290 mg	0	<<<1%
Total Carbohydrates		275 g	1059	50.4%
Non-fiber Carbohydrates	Sugars + Starches	259 g	1036	49.3%
Total Sugars	Glucose, Fructose, Sucrose Lactose, Maltose	137 g	548	26.1%
Total Starches	Amylose + Amylopectin	122 g	488	23.2%
Total Fibers		16 g	22	1.0%
Soluble		5.5 g	22	1.0%
Insoluble		10.5 g	0	0%
Total Protein		84 g	336	16.0%

Table-2 (Ref. - 3)

Estimated daily Paleolithic intake of selected nutrients compared with current and recommended levels

	Paleolithic intake ¹	R.D.A. ²	Current intake ²
<i>Vitamins, mg/d</i>			
Riboflavin	5.01	1.3-1.7	1.34-2.08
Folate	0.340	0.18-0.2	0.149-0.205
Thiamin	3.07	1.1-1.5	1.08-1.75
Ascorbate	439	60	77-109
Vitamin A ³	2,240	800-1,000	1,170-1,414
Vitamin A ⁴	28.0	8-10	7-10
<i>Minerals, mg/d</i>			
Iron	62.4	10-15	10-11
Zinc	33.4	12-15	10-15
Calcium	1,520	800-1,200	750
Sodium	604	500-2,400	4,000
Potassium	6,970	3,500	2,500
<i>Fiber, g/d</i>	86.0	20-30	10-20
<i>Energy, Kj/d</i>	10,465	9,209-12,139	7,326-10,465
(kcal / d)	(2,500)	(2,200-2,900)	(1,750-2,500)

1. Based on 673 g. Meat and 1250 g. Vegetable food / day yields 10465 kj (2500 k kal).
2. Food and Nutrition Board 1989.
3. Retinol equivalents.
4. A-tocopherol equivalents.

Table-3 (Ref. - 2)
Widely Agreed-un-Qualitative Differences Between Average Ancestral (Hunter-Gatherer) Diets and Contemporary Western Diets

	Ancestral (Hunter-Gatherer)	Contemporary Western
Total energy intake	More	Less
Caloric density	Very low	High
Dietary bulk	More	Less
Total carbohydrate intake	Less	More
Added sugars/refined carbohydrates	Very little	Much more
Glycemic load	Relatively low	High
Fruits and vegetables	Twice as much	Half as much
Antioxidant capacity	Higher	Lower
Fiber	More	Less
Soluble : insoluble	Roughly 1:1	<1 insoluble
Protein intake	More	Less
Total fat intake	Roughly equal	
Serum cholesterol-raising fat	Less	More
Total polyunsaturated fat	More	Less
ω - 6 : ω - 3	Roughly equal	Far more ω - 6
Long-chain essential fatty acids	More	Less
Cholesterol intake	Equal or more	Equal or less
Micronutrient intake	More	Less
Sodium : potassium	< 1	> 1
Acid base impact	Alkaline or acidic	Acidic
Milk products	Mother's milk only	High, lifelong
Cereal grains	Minimal	Substantial
Free water intake	More	Less

Table-4 (Ref. - 4)
Plasma ω - 6 ArA and ω - 3 EPA as a Percentage of Total ArA + EPA, ArA : EPA Ratio, and Cardiovascular Disease Mortality

Population	ω - 6 ArA	ω - 3 EPA	ArA/EPA Ratio	CHD Related Deaths
Caucasian American	96%	4%	22:1	Very High
Japanese American	93%	7%	13:1	High
Quebecers (Urban Canadian)	93%	7%	13:1	High
Swedish	92%	8%	11:1	Moderate
Spanish	87%	13%	7:1	Moderate
Urban Japan	69%	31%	2:1	Low
Inuit Nunavik	67%	33%	2:1	Low
Rural Japan (elders)	56%	44%	1:1	Very Low
Greenland Inuit (2001)	52%	48%	1:1	Very Low
Greenland Eskimos (1975)	10%	90%	1:9	Very, Very Low

OBITUARY

Mr. Prem Prakash Gupta, one of the founder members of the OTAI, Eastern Region, Calcutta has left for heavenly abode on the 13th August' 11. He has been conferred with Life Time Achievement Award in recognition of his services rendered to OTAI. He has been associated with many philanthropic Institutions.

OTAI (Eastern Region) Calcutta condoles the sad demise of late P. P. Gupta and conveys their heartfelt condolences to the bereaved family.

PARLIAMENT NEWS

Lok Sabha Unstarred Question No. 1095 Answered on 1st March 2011

EDIBLE OIL

Shri Radhe Mohan Singh

Shri Ram Sundar Das

Shri K. Sudhakaran

Shri Bhisma Shankar Alias Kushal Tiwari

Will the Minister of Consumer Affairs, Food and Public Distribution be pleased to state :

(a) whether the consumption/demand of edible oil in the country is in excess of its production;

(b) if so, the details thereof and reasons therefor indicating the production, import, availability and demand of edible oil during each of the last three years and the current year;

(c) whether any survey has been conducted by the Government regarding demand and supply of edible oil;

(d) if so, the details and the outcome thereof; and

(e) the steps taken to improve production and availability of edible oil in the country?

Answer

Minister of State (Independent Charge) for Consumer Affairs, Food & Public Distribution (Prof. K. V. Thomas).

(a) : Yes, Madam,

(b) : Domestic production of edible oils is much lower than their consumption/demand in the country. As a result, about half of the demand is met through imports.

Estimated domestic production of oilseeds, availability of edible oils and Import of edible oils during last three years and current year are as follows :

(In lakh tons)

Oil Year (Nov-Oct)	Production of oilseeds	Domestic availability of Edible Oils	Import of Edible Oils	Total availability of edible oils (domestic + imports)
2009-10	248.83	79.46	88.23	167.69
2010-11	278.48	86.76	20.74 (Nov-Jan)	

(c) & (d) : National Sample Survey on consumer expenditure conducted periodically includes estimation of consumption of edible oils. Projections for demand of edible oilseeds

in the country during 2007-08 to 2011-12 were made by Working Group constituted by Planning Commission. This group also considered results of 55th round of NSS (1999-2000). Based on behavioristic approach, annual requirement of edible oils in the country calculated from projections of oilseeds as estimated by this Group was as given below :

(In lakh tons)

Year	Demand for oilseeds	Demand for edible oils
2007-08	455.6	127.57
2008-09	474.3	132.80
2009-10	493.5	138.18
2010-11	513.4	143.75
2011-12	533.9	149.49

However, the actual demand of edible oils seems higher than these estimates made in 2006.

(e) The Government has taken various steps to improve production and availability of oilseeds/edible oils in the country such as these :

(i) A centrally sponsored integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) is being implemented in 14 major oilseeds growing States and 9 oil palm growing states to increase production. Under this Scheme as well as Macro Management of Agriculture (MMA) and Rashtriya Krishi Vikas Yojana (RKVY), assistance is provided for improving agronomic practices.

(ii) Extension work is being taken up for propagation of improved production and pest management technologies.

(iii) A new sub-scheme has been introduced during 2010-11 under RKVY as a special initiative for pulses and oilseeds for organizing sixty thousand pulses and oilseeds villages in rainfed areas.

(iv) Imports of edible oils have been facilitated through liberal import duty structure.

Lok Sabha Unstarred Question No. 1146 Answered on 1st March 2011

IMPORT SUBSIDY ON EDIBLE OIL

Shri Lal Chand Kataria

Will the Minister of Consumer Affairs, Food & Public Distribution be pleased to state :

(a) the amount of subsidy provided on the import of edible oils with a view to provide relief to the poor sections of the society from the spiralling prices of edible oils during each of the last three years and the current year ;

-
- (b) whether the Government proposes to import edible oils during the ensuing year to control the prices; and
(c) if so, the details thereof alongwith the subsidy earmarked for the purpose ?

Answer

Minister of State (Independent Charge) of Consumer Affairs, Food & Public Distribution (Prof. K. V. Thomas).

(a) Under the Scheme for distribution of subsidized imported edible oils through States/Union Territories to ration card holders, a subsidy of Rs. 15/- per kg of edible oil is provided to importing Central Public Sector Undertakings (CPSUs).

During 2008-09 and 2009-10, Rs. 424.25 crores and Rs. 198.13 crores respectively have been released to CPSUs, During current year, while Rs. 11.22 crores have already been released, their claim of about Rs. 509 crores are under scrutiny.

(b) & (c) To augment availability of edible oils in the country so that their prices may be moderated, extension of the Scheme for Distribution of subsidized imported edible oils through States/Union Territories beyond 31.3.2011 is presently under consideration. Imports of edible oils by private trade are being facilitated through liberal import duty structure.

Lok Sabha Unstarred Question No. 160 Answered on 22nd February 2011

RISE IN PRICE OF EDIBLE OIL

Shri P. C. Mohan

Shri Sonawane Pratap Narayan Rao

Will the Minister of Consumer Affairs, Food and Public Distribution be pleased to state :

- (a) whether the prices of edible oil have registered a steep rise during the recent months;
(b) if so, the details thereof and the reasons therefor;
(c) whether the Government proposes to import edible oils including soybean oil to improve availability and check prices;
(d) if so, the details thereof; and
(e) the other steps taken to improve availability and check the prices of edible oil along with the success achieved therein ?

Answer

Minister of State (Independent Charge) for Consumer Affairs, Food & Public Distribution (Prof. K. V. Thomas).

(a) & (b) : During last three months, wholesale domestic prices of edible oils such as soybean oil, groundnut oil, mustard oil, sunflower oil and RBD palmolein have increased

0.35% to 12.92%. Over the last one month, however, the prices of soybean oil, groundnut oil and sunflower oil have declined by 0.33% to 1.38%.

The increase in domestic prices of edible oils in the country has been due to continuous increase in consumption of edible oils by about 6% per year, lower domestic production of edible oils in oil year 2009-10 (Nov-Oct) than in 2008-09 and their high international prices, as about half of domestic demand is met through imports.

(c) & (d) : In order to augment availability of edible oils for domestic consumers and check rise in prices, their imports have been facilitated. Import duty on crude and refined edible oils has been reduced to 0% and 7.5% respectively since 1.4.2008. This duty structure has been continued upto September 2011. Due to this liberal import duty structure, 88.23 lakh tons of edible oils have been imported into the country during 2009-10 (Nov-Oct).

(e) In addition to facilitation of imports of edible oils, Government has taken following measures to ensure adequate availability of edible oils in the country and check rise in their prices :-

(i) Government has been implementing since 2008-09 a Scheme for distribution of subsidized imported edible oils. Under this Scheme, RBD palmolein and soybean oils imported by Central Public Sector Undertakings (CPSUs) have been delivered to State/Union Territory Governments for distribution to ration card holders. Government provides a subsidy of Rs. 15/- per kg. on these edible oils distributed under the Scheme. During Oil Year 2009-10 (Nov-Oct) CPSUs have imported 3.76 lakh tons of edible oils.

(ii) Export of major edible oils has been banned since 17.03.2008, except coconut oil through Cochin Port, certain oils extracted from minor forest produce and small quantity of edible oils in consumer packs of up to 5kg.

(iii) Government has allowed State/UT Governments to impose stock holding limits on oilseeds and edible oils.

(iv) Efforts have been made to increase domestic production of edible oils.

These measures have resulted in higher domestic availability of edible oils, check on rise in their prices and delivery of subsidized imported edible oils to ration card holders especially BPL families in several States/UTs.

CHINA TO INTRODUCE NEW GMO LAWS

The government of China is preparing new legislation of feed produced from GMO crops. It is expected to affect all aspects of GMO usage including planting, production, processing, trade and research. While some in China are calling for much stricter rules on GMO usage, citing their concerns about the use of certain soybean oils in schools and universities, which are not approved, it is generally believed that the new legislation will provide a more transparent and workable framework for continued research into, and use of, GMO crops in the future.

The new law is still at the drafting stage, after which it will go to the Standing Committee of the People's Congress for discussion before its final stage which is the public announcement period. "The law on GMO food will take the reference of the US law on GMO events, ie GMO food could be circulated where there is no evidence that it is harmful. The regulation therefore is likely to herald a more open door policy on GMO products" said Alan Ding of Gafta's Beijing office. "There remains, however, strong opposition to GMOs in China, and we are awaiting the draft legislation with interest."

(Source : Gaftaworld Magazine, Issue 188 February 2011).

2010/11 World Production Revised Upward by 3.6 Mn T

World production of 7 oilseeds is likely to reach 436.1 Mn T this season, reflecting an upward revision by 3.6 Mn T from our previous estimate on Jan 28 and also an increase by 3.1 Mn T from the unusually high level registered in the 2009/10 season.

This will bring total world supplies of 7 oilseeds to a record 515 Mn T this season, an all-time high and significantly above the 492 Mn T a year and 457 Mn T two years earlier. Soybeans account for most of this increase with world supplies likely to reach 326 Mn T vis-a-vis 306 Tnd T and 271 Mn T, respectively.

On the demand side a major development is to be seen in the significant increase in soybean disposals, caused by insufficient world supplies of other commodities, primarily of palm oil as well as of sunflowerseed & products and rapeseed & products.

In Oct/Dec. 2010 crushing of soybeans reached a record 56.0 Mn T worldwide (which was 6.9 Mn T or 14% higher than a year earlier). For Jan/March 2011 we expect a seasonal decline to 53.3 Mn T, but this is still 5.0 Mn T or 10% higher than in Jan/March 2010.

For April / Sept 2011 we forecast a slowing-down of the soybean crushing, due partly to the anticipated recovery in world palm oil production and partly to a slowing-down of the growth in world consumption of soya meal. Still, world soybean crushings are set to increase substantially to 227.2 Mn T in Oct/Sept 2010/11, according to our latest estimate, which is 16.6 Mn T above last season and even 32.6 Mn T above 2008/09.

*(Source : Oilworld Weekly dated 25th Feb, '11
Internet : www.oilworld.de)*

7 Oilseeds : World Supply & Demand (Mn T)

	10/11F	09/10	08/09
Opening stocks	79.2	59.1	69.7
Production	436.1*	433.0	386.6
there of Soybeans	259.5*	260.3	211.3
Cottonseed	44.1*	38.9	41.2
Groundnut, Shelled	23.8*	23.1	24.3
Sunflowerseed	32.3*	32.8	34.8
Rapeseed/canola	58.8*	60.4	58.3
Palmkernels (b)	12.5*	11.7	11.6
Copra (b)	5.2*	5.8	5.3
Total supplies	515.3*	492.1	456.5
thereof soybeans	325.7*	305.6	270.9
Disappearance	437.9	412.9	397.4
thereof Soybeans	259.5*	238.9	225.7
Sunseed	32.6*	33.8	34.3
Rapeseed	60.4*	60.5	55.4
Other	85.4*	79.7*	82.0
Ending stocks	77.4*	79.2	59.1
thereof soybeans	66.2*	66.7	45.2
Stocks/usage (a)	17.7%	19.2%	14.9%
thereof Soybean	25.5%	27.9%	20.0%

(a) Stocks in % of annual disappearance (b) Calendar year i.e. 2nd of split year.

FOR THE ATTENTION OF MEMBERS OF OTAI

The book titled 'Soaps and Detergents' written by K. S. Parasuram and published originally by Tata McGrawhill Publishing Co. Ltd. is out of print now.

However, a few copies are still available on a first come first served basis from the author who may be contacted on his mobile 9831132068 or land line 033-24999125 at the following address :

Tower 1, Flat 21E, South City, 375, Prince Anwar Shah Road, Kolkata - 700 068
(Landmark -Behind South City Mall).

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A REVIEW

The book entitled "A treatise on Analysis of Food, Fats and Oils" is an example of unique competence and contribution of the authors, S. K. Roy, N. K. Pramanik and A. R. Sen.

The book is the first of its kind in India. It covers the traditional and modern analytical methods for the characterization and quality of fats, oils as well as other food items.

The authors are well reputed and qualified and they have applied their collective wisdom and expertise in including and presenting more appropriately and meticulously the analytical methods.

The book can also be viewed as a rarer type as it deals with the statutory and industrial aspects of fats, oils and their products, and pollution control in vegetable oil industry.

In fact these aspects are of extreme use and importance to those concerned with these issues.

The book is already well received by the readers and users in the academic and industrial circles throughout India because of the highly relevant and beneficial methodologies and basic-cum technological information. The book will be recognised in due course of time as one of the top quality analytical books in the area of food, fats and oils.

Prof. D. K. Bhattacharyya
21-6-2003

Regarding availability/price enquiries may be made to :
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BOOK REVIEW

A book entitled "Perfumery Materials, Production and Applications" has been authored by an very eminent Professor (Dr) D. K. Bhattacharyya, Emeritus Fellow (AICTE), Adjunct Professor Bengal Engineering and Science University, former President, O.T.A.I and a Scientist of National and International repute.

The book speaks for itself about his mastery and competence in the discipline of "Perfumery Materials".

"The book demonstrates the scopes of certain specific reactions and raw materials in producing new synthetics. The enormous scopes of biotechnology involving bio-conversion processes', with isolated enzymes and by fermentation biotechnology involving selective microorganisms has been indicated in making synthetics. The applications of natural aromatic oils in aromatherapy, food, cosmetics/toiletries, imitation perfumery and allied sector have been included.

Standardisation and evaluation of natural aromatic (essential oils and incidence of their adulteration have been elaborated in order to ascertain their quality and authenticity for sustaining the business in the industry" says Prof (Dr) R.N. Mukherjee, Former, Professor and Head, Deptt of Chemical Engg, University of Jadavpur. The book will fulfill a long felt want in the discipline of Essential Oils and will cater to the various categories of Scholars, Scientists and Technologists. The book has already been well appreciated in India and abroad, though published by the Stadium Press L.L.C., USA.

Those interested to procure a copy of this Valued book on Essential Oils may contact Professor D. K. Bhattacharyya at Phone No (033) 2461 9662.

(S. K. Roy)
Editor

BOOK REVIEW

A book entitled "Advances in Fish Processing Technology" has been authored by Dr. D. P. Sen, an executive committee member of the OTAI (EZ), Calcutta. He is highly qualified with National and International recognition.

The contents of the book are • Resources, Their Utilisation - Emerging Trends • Chemical Composition and Their Technological Significance • Fish Odours and Flavours • Fresh Fish Handling and Chill Storage • Modified Atmosphere Packaging of Seafoods • Assessment of Freshness Quality • Traditional Salted and Dried Fish Products • Proteolysed Fish Products • Minced Fish Technology • Retort Pouch Processing Technology • Surimi and Surimi-Based Products • Irradiation in Fish Processing • Antarctic Krill and its Processing • Microwave in Fish Handling and Processing • Fish Food Products • Advance in Freezing Technology • Shrimp Culture, Shrimp Feed, Melanosis and Moulting • Selected By-products from sea • W-3 Fatty Acids, Fish Oil and Fish in Health and Nutrition • Fishborne Pathogens and Depuration • Toxins, Pollutants and Contaminants • Quality Management.

The book should be useful to a wide range of readers including ichthyologists and researchers involved with the fish industry. The book has already been well appreciated among the scientific community.

Publisher : Allied Publisher Pvt. Ltd.

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