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Edible Oil Industry Developments in West Asia

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Edible Oil Industry Developments in West Asia and their Impact on the Palm Oil Market

Liberalisation, disinvestment and privatisation in the oils and fats trade and industry, coupled with the weakening of trade and technical barriers, have resulted in the rapid growth of the edible oils refining industry in West Asia. Additional changes in import mechanisms, imports and consumption patterns of oils and fats have resulted in the strengthening of palm oil's market position in the region.

Iftikhar Ahmad

Important developments concerning West Asia's edible oil industry which took place from 1987-97 were disinvestment and privatisation in the vegetable oils industry and trade, and the implementation of progressive policies on trade and technical barriers. The developments influenced the way the regional oils and fats industry functioned and led to growth in the industry and related infrastructure, shifts in import mechanisms and imports, and changes in the consumption patterns of oils and fats.

The changes contributed positively to the market development of palm oil in particular. Its import by the region's countries increased by 105 percent from 1.1 to 2.3 million tonnes from 1987 to 1997. Palm oil's share of the total imports of oils and fats also increased to 53.6 percent. Institutional consumption of palm olein as a general purpose cooking and frying oil has been well accepted and, as a result, has increased.

DEVELOPMENT REVIEW

Some of the important developments in West Asia which have directly or indirectly influenced the edible oils industry are listed in *Table 1*.

Politico-Economic

The commencement of the "peace process" between Israel and its neighbours has contributed towards improving the economies of countries such as Jordan, Israel, Egypt and Syria in particular. This in turn triggered off processes such as liberalisation of their economies and privatisation of the public sector. This has had an impact on the oils and fats industry.

Disinvestment and Privatisation

Pakistan and Syria are two countries in West Asia where the processes of liberalisation and privatisation took place.

Pakistan: In the mid-1980s, the role of the Ghee Corporation of Pakistan (GCP) was frozen and the private sector allowed to emerge and grow. Subsequently, in the early 1990s, GCP's role in the import and processing of edible oils was gradually abolished through the disinvestment of its factories. This resulted in rapid development of the vegetable oils refining industry in the private sector, and liberalisation in the import of oils and fats, and the domestic trade.

Syria: With partial liberalisation of the edible oil industry and trade, traders have been allowed to import edible oil products although with some controls on foreign exchange availability and retail prices. The role of the public sector edible oil industry has been frozen. The new industry in the private sector has been licensed since 1991. At present, 90 percent of Syria's edible oils processing and production is in this sector.

Official Policies (Trade and Technical Barriers)

Subsidiaries: The Gulf states traditionally had no barriers on international and domestic trade. Due to public welfare policies then, some of the food products, including edible oil products, commercially imported as well as locally produced were heavily subsidised. As this adversely affected the local industry, the subsidies were subsequently withdrawn on imported packed products, but retained on the raw materials.

In the early 1990s, subsidies on raw materials were also withdrawn in Saudi Arabia, Kuwait and Bahrain. After the 1990 Gulf War, Kuwait provided a 15 percent subsidy on corn oil produced by local refineries and distributed through the Ministry of Supplies outlets. Corn oil

Table 1. **Important Developments in West Asia (1987-97)**

Countries	Developments
Bahrain	• Commissioning of edible oil refinery
Iran	• Import of edible oils and fats in bulk only by GTC with 15% duty exemption • Two stage easing of technical constraints for palm products
Iraq	• UN embargo imposition in 1991 and subsequent relaxation in food products
Jordan	• Rapid development of vegetable oil refining industry as well as UN bilateral trade facility on "Oil for Food" with Iraq
Kuwait	• Recommissioning of local vegetable oil plant after the Gulf War • Subsidy on corn oil (15%) for the govt. supply distribution
Lebanon	• Reconstruction and rehabilitation after the civil war
Oman	• Expansion of local vegetable oil refinery
Pakistan	• Disinvestment of public sector GCP • Liberalisation of vegetable oil imports and trade • Increase in number of vanaspati factories • New bulk handling and storage infrastructures at Port Qasim
Saudi Arabia	• Gradual withdrawal of subsidies • New edible oil industry
Syria	• Liberalisation of economy • Relaxation on exchange control • Freezing of public sector role • Liberalisation of edible oil trade • New edible oil industry in private sector • Construction of port bulk handling and storage facilities
Turkey	• Increased export potential of edible oil products to East Europe and Central Asian Republics • Expansion in existing vegetable oil industry • Harmonisation with European custom union tariffs
UAE	• New vegetable oil industry • Expansion in the existing refinery industry • Re-export point for edible oil products to Africa, Central Asia and East Europe
Yemen	• Civil war and merger of South and North Yemen • New edible oil industry and port bulk storage facilities

from other sources, or commercial imports, were not subsidised. In Bahrain, a reduced import tariff of 5 percent was introduced on sunflower oil *vis-a-vis* other imported liquid oils which carried an import tariff of 20 percent. These developments adversely affected the import and consumption of other liquid oils including palm olein in the two Gulf states.

Import Tariffs: Import tariffs or regulatory import tariff mechanisms have been used to stabilise local prices, protect local producers of vegetable oils or create preferences for certain oils from specific regions. In Pakistan, the import tariffs on oils and fats have traditionally been very high. They are also frequently altered to collect much needed revenue and to encourage the indigenous production of oilseeds and oils. Favourable import tariffs have been persistently introduced for imported soyabean oil from the US or South America.

Turkey has also used the import tariff mechanism to protect indigenously produced vegetable oils. However, Turkey's harmonisation of its customs tariffs in 1996 with those of the European Union has brought stability in the import pattern of oils and fats.

Gulf states like Saudi Arabia and Bahrain have provided limited protection to their edible oil industry by imposing a 20 percent import tariff on imported packed products from countries other than the Gulf states and the Arab League. The withdrawal of subsidies and import tariff protection have enabled the Gulf states' edible oil industry to stand on its own feet and face competition from imported packed products.

In Iran, the public sector-based GTC has been the sole importer of bulk vegetable oils for food uses. It is heavily protected through exemption from a 15 percent import duty. Private sector importers do not get duty exemption nor are allowed to import bulk vegetable oils for edible purposes. The private sector can, however, import oils and fats for inedible purposes using its own foreign exchange.

Yemen, Syria, Jordan and Lebanon have fairly stable and consistent import tariff policies which have remained unchanged over the years. This policy of maintaining consistent import tariffs has helped the local refining industry with forward imports of oils and production planning.

Technical Barriers: In some West Asian countries technical barriers were introduced by incorporating technical clauses in the official standards for raw materials or requiring packed products to contain certain policy criteria to protect the interests of the local industry. For instance, in the 1980s, Iran did not allow incorporation of palm products in vegetable ghee. In the early 1990s, the technical barriers to the use of palm oil were eased. These barriers have been further relaxed since 1997. The Iranian Standards and Industrial Research Institute (ISIRI) has issued official standards for palm products allowing palm oil/palm olein to be blended with other oils under certain conditions. Palm olein of iodine value (IV) exceeding 60 is allowed unrestricted use as household cooking oil. Pakistan's cooking oil standards restricted the use of palm olein in too high a proportion by requiring a maximum melting point of 10°C.

In the 1980s, Oman introduced an IV limit of 70 in vegetable ghee standards to protect the local ghee industry and eliminate competition from palm-based

vegetable ghee products. Similarly, Syrian vegetable ghee standards also create a technical barrier for unhydrogenated palm-based ghee and require the compulsory hydrogenation of liquid oils.

Growth in the Edible Oil Industry

The period 1987-97 registered phenomenal growth in the number of edible oil refineries in the region's countries from 93 to 180. The total oils and fats refining capacity escalated by 58 percent from 3.9 to 6.8 million tonnes. The most significant increases in refining capacities took place in Pakistan (up 72 percent to 2.8 million tonnes), Turkey (up 60 percent to 1.6 million tonnes), Iran (up 35 percent to 850,000 tonnes), Jordan (up 630 percent to 350,000 tonnes), Saudi Arabia (up 80 percent to 270,000 tonnes) and Yemen (up 54 percent to 250,000 tonnes).

This development has led to a surplus in refining capacity in West Asia. Consequently, the refining industry has been facing tough competition and lower profits due to excess supply. The positive and more interesting aspect of this development is that by utilising its excess capacity, the region has turned into a net re-exporter of edible oil products.

IMPACT FROM REGIONAL DEVELOPMENTS

The developments in the edible oils industry of West Asia have influenced the regional edible oils scenario in many ways. The significant ones are:

- Changes in import mechanism and import pattern of oils and fats;
- Shift in the consumption pattern of oils and fats;
- Infrastructure developments such as port bulk handling and storage facilities;
- Increased competitiveness in the edible oils' refinery business;
- Export and re-export of edible oil products.

Changes in Import Mechanism and Import Pattern

Due to economic liberalisation, privatisation and disinvestment in certain countries, the public sector's import and utilisation of oils and fats has ceased except in Iran. There, the public sector-based GTC is still actively involved in commercial bulk imports of oils and fats. In Syria, the private sector has been permitted to import oils and fats with some controls. The biggest change in import mechanism has taken place in Pakistan. The public sector-based GCP, which used to import over one million tonnes of oils and fats a year, has been privatised, and the import of oils and fats has been completely passed over to the private sector.

Changes in import mechanism as well as import tariffs in some regional countries have contributed to the shift from packed products to bulk imports.

Changes in Consumption Pattern

The consumption pattern of oils and fats has changed during 1987-97 in two ways: sector-wise and product-wise.

Sector-Shift: Due to the trend in eating out, fast food restaurants have become common in the region. Similarly, snack foods and industrial frying industries have also emerged. These two developments have increased the demand for and consumption of commercial cooking and frying oils by the institutional sector. Consequently, there has been a shift in the consumption pattern of oils and fats from the domestic to the institutional sector.

Product-Shift: The consumption pattern of oils and fats by domestic consumers has also shifted from solid fats to liquid oils. Factors responsible for this shift have been greater health awareness, availability of a variety of liquid oils, as well as a marketing push for certain liquid oils by the regional edible oil industry. Factors behind the marketing push have been capacity utilisation and profitability of the industry. *Table 2* highlights the existing consumption pattern based on sector and product.

Infrastructure Development

The phenomenal growth in the capacity of the region's refining industry has contributed to the improvement, expansion and creation of new infrastructure to handle the larger volumes, the most notable of which has been the development of port bulk handling, storage and transportation facilities in several countries. For example, Pakistan has put up a number of such installations in Port Qasim near Karachi, in addition to expanding some of the existing facilities in Keamari port of Karachi. Pakistan now has 22 installations in both ports with a total oils and fats storage capacity of over 500,000 tonnes. Other countries where such infrastructure has been added are Jordan, port of Aquaba; Syria, port of Tartus; Yemen, port of Hodeidah; and UAE, port of Abu Dhabi. Up till 1996, Syria had no port bulk handling and storage facilities

***Table* 2. Consumption Pattern (1997)**

Country	Sector		Type	
	Domestic (%)	Institutional (%)	Liquid oils (%)	Solid fats(%)
Bahrain	60	40	90	10
Iran	80	20	30	70
Iraq	90	10	20	80
Jordan	70	30	70	30
Kuwait	60	40	80	20
Lebanon	60	40	85	15
Oman	70	30	85	15
Pakistan	90	10	15	85
Saudi Arabia	50	50	90	10
Syria	75	25	40	60
Turkey	75	25	50	50
UAE	50	50	85	15
Yemen	85	15	40	60

Solid fats: Vegetable ghee, Vanaspati, Margarine, Shortenings
Liquid oils: Palm olein, Corn oil, Sunflower oil, etc.

and was obliged to import packed edible oil products. Now its port has four such installations in operation. In addition to the expansion in port handling and storage infrastructure, corresponding expansion has taken place in road transport logistics of oils and fats to the inlands of some countries i.e. Pakistan, Jordan, Iraq and Syria, increasing the mobility of vegetable oils from the receiving ports to the factories.

Competitiveness and Profitability

The excess oils and fats refining capacities, coupled with commercial imports of packed products from outside West Asia, has made refining a very competitive business. The industry prefers to produce premium liquids oils like corn, sunflower and olive for better margins. The remaining capacity is utilised to produce standard products such as palm-based vegetable ghee and cooking oils.

Despite this practice, the profit margins of the vegetable oil industry have shrunk and it has been getting increasingly competitive. The industry needs to diversify, introduce new technology, and produce value-added products to sustain its economic viability.

Exports and Re-export of Edible Oil Products

With the industry's rapid growth and resulting excess refining capacities, it has developed a capacity to re-export edible oil products. Approximately 500,000 tonnes per year are re-exported not only to other regional countries but also to nearby regions such as the Central Asian Republics, Eastern Europe and Africa.

In 1997, Jordan was the front runner exporting over 200,000 tonnes of edible oil products to Iraq under the UN "Oil for Food" programme. It was followed by UAE (120,000 tonnes), Saudi Arabia (35,000 tonnes), Bahrain (25,000 tonnes) and Oman (16,000 tonnes). In fact, UAE has established itself as the re-export centre for edible oils as has been the case with other food items.

PALM OIL'S MARKET POSITION

Developments over the years and their influence on the oils and fats industry in West Asia have had direct and positive impact on palm oil's market position. The highlights of these changes are:

a) Growth in regional palm oil imports;
b) Growth in palm oil per capita consumption;
c) Changes in the import pattern for palm oil products;
d) Shift in consumption pattern of palm olein.

Palm oil's market growth and its favourable position in West Asia can be largely attributed to its technical versatility, price competitiveness and increasing availability.

Palm Oil's Market Growth

Palm oil imports into the region grew from 1.1 million tonnes in 1987 to 2.3 million tonnes in 1997, an increase of 105 percent. Palm oil's share of the total regional imports of oils and fats jumped from 32.7 to 53.6 percent. Palm oil's market growth and its favourable position in West Asia can be largely attributed to its technical versatility, price competitiveness and increasing availability. Developments such as expansion in the industry, improved infrastructure and withdrawal of trade and technical barriers also facilitated palm oil's market growth.

Palm Oil's Per Capita Consumption

The region's population increased from 277.0 to 351.9 million from 1987 to 1997, a growth rate of 2.7 percent a year. During this period, total imports of oils and fats also grew by 2.7 percent per year. However, palm oil imports registered a higher growth rate of 10.1 percent per year.

Thus, while the per capita import of oils and fats remained constant at 12.4kg, the per capita import of palm oil increased from 4.1kg in 1987 to 6.7 kg in 1997. These figures signify the fast development of the palm oil market.

Import Pattern for Palm Oil Products

Palm oil and palm olein were the major palm products imported and consumed by the region. RBD palm oil was mainly imported by Pakistan and Jordan to produce palm vegetable ghee. Palm olein was imported by the Gulf states, namely Saudi Arabia, UAE, Oman, Bahrain and Yemen to produce a general purpose cooking and frying oils. Palm-based confectionery fats, palm stearin and other palm by-products have also been imported to meet the needs of a variety of industries.

Consumption Pattern for Palm Olein

Due to the growing acceptance of premium liquid oils such as corn, sunflower and olive, the share of palm olein in the household sector has been on the decline. The upper middle and high income segments of the population use palm olein sparingly. However, the lower middle, low income and expatriate work force in the Gulf states commonly use palm olein as a general purpose cooking and frying oil. Analysts state palm olein constitutes about 50 percent of liquid oils marketed in the Arabian Peninsula. In contrast, consumption of palm olein in Pakistan is negligible.

However, in the institutional sector, palm olein has gained enormous acceptance as a commercial and industrial frying oil, increasing its use in this sector. Almost all snack food industries and restaurants use palm olein as a general purpose cooking and frying oil.

To support and augment this trend, PORIM has conducted seminars on palm olein-based frying oils, highlighting the techno-economic suitability of palm olein for this purpose.

In general, for the Arabian Peninsula palm olein is the major and common vegetable oil imported, processed and marketed for household and institutional consumption.

MARKET UPDATE

Poland - Household Consumption of Vegetable Fats Set to Increase

While Poland's production of vegetable oils and their products has been steadily increasing over the years, its total consumption of all fats has been decreasing.

The situation pertaining to oils and fats in Poland, one of Europe's newly emerging nations, is an interesting one. While its production of vegetable oils and their products has been steadily increasing over the years, its total consumption of all fats has been decreasing.

Poland's total consumption of all fats in 1997 dropped to 19.0 kg/capita. This fall has been driven by efforts to cut back on animal fats which dropped to a level of 7.0 kg/capita in 1997, from 7.2 and 10.3 kg/capita in 1996 and 1993 respectively. In contrast, household consumption of vegetable fats, stable at 12 kg/capita from 1995-97, is set to increase in 1998.

Margarine consumption fell marginally in 1997 to 7.9 kg/capita from 8.3 kg/capita in 1995, while oil consumption rose to 4.1 kg/capita.

UPTREND IN PRODUCTION

Poland's Institute of Agricultural Economics and Food states that the production of vegetable oils and their products is expected to increase by at least 5 percent for 1998. The output is expected to comprise 210,000 tonnes of refined oils and 410,000 tonnes of margarine. Forecast figures for the manufacture of margarine may be revised due to uncertainty regarding Russian exports.

Growth in vegetable oil production exceeded 130 percent between 1990 and 1997 to reach 640,000 tonnes, recording one of the highest rates of growth in the food sector. This period was accompanied by the modernisation and expansion of the industry's capacity to one million tonnes for oilseed processing, 590,000 tonnes for oil refining and 430,000 tonnes for margarine output. The cost of this expansion in capacity, estimated at US$300 million, has been funded primarily by foreign investments.

Growth in vegetable oil production exceeded 130 percent between 1990 and 1997 to reach 640,000 tonnes, recording one of the highest rates of growth in the food sector.

The production of refined oils rose by 21.1 percent in 1997 to 206,000 tonnes, while margarine production expanded by 9.5 percent to 403,000 tonnes (see *Table 1*).

Factors attributed to Poland's growth in vegetable oil production included an increase in its rapeseed harvest by 145,000 tonnes, bringing the total to 595,000 tonnes, substantial imports of oilseeds, high demand for vegetable oils, expanding exports of margarine to ex-Soviet countries and growing production of yellow fats.

Table 1. **Poland's Production of Vegetable Oils (thousand tonnes)**

	1998*	1997	1996	1995	1990
Total Oils	670.0	640.4	568.4	550.0	279.0
– Refined oils	210.0	206.0	170.1	149.1	76.6
– Margarine	410.0	403.0	368.1	373.6	179.0

Note: * forecast

Source: *Central Statistical Office*

RESEARCH HIGHLIGHTS

Tocotrienols Inhibit the Growth of Estrogen Responsive Human Breast Cancer Cells

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(University of Reading)*

Investigations into the potential antiproliferative effects of tocotrienols on the growth of estrogen-responsive human breast cancer cells and comparison against the effects of α-tocopherol showed that the tocotrienol-rich fraction (TRF) inhibited the growth of these cells at concentrations as low as 0.5μg/mL. Complete suppression of growth was achieved at 8μg/mL.

Growth inhibition was found in the presence as well as in the absence of estradiol. Separation of TRF by thin-layer chromatography into individual tocotrienols revealed that the γ- and δ-fractions were the most inhibitory, resulting in complete suppression of growth at concentrations of 4 μg/mL and higher. By contrast, α-tocopherol had no inhibitory effect on the growth of breast cancer cells.

These results extended previous studies using estrogen-insensitive cells and demonstrated that tocotrienols can exert direct inhibitory effects on the growth of breast cancer cells. The results also demonstrated that estrogen-responsive cells are very much more sensitive to tocotrienol-mediated growth inhibition than the estrogen-insensitive cells.

In establishing the mechanism of inhibition, studies on the effects of TRF on estrogen-regulated pS2 gene expression showed that tocotrienols do not act *via* an estrogen receptor-mediated pathway and must therefore act differently from estrogen antagonists.

Further, tocotrienols did not increase levels of growth-inhibitory insulin like growth factor binding proteins (IGFBPs), also implying a different mechanism for retinoic acid inhibition of breast cancer cell growth. These observations indicate that tocotrienols merit further investigation as possible agents for breast cancer prevention and/or treatment.

Red Palm Oil: A New Vegetable Oil Containing Carotenoids and Other Natural Antioxidants

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(Global Palm Products Sdn Bhd)*

Red palm oil (I.V. 65) is a new edible oil available in the market under the trade name *Carotino*. It is produced using a PORIM-patented process employing short-path distillation.

The oil contains not less than 500 ppm carotenes and 800 ppm vitamin E. The major carotenes present (>80%) have been identified by HPLC to be α- and β-carotenes, and the major E vitamins are tocotrienols (>70%). Red palm oil also contains another group of effective antioxidants, ubiquinones, at <50 ppm.

The good attributes of these minor components in terms of vitamin, antioxidant, anticancer and antiatherosclerotic properties have made it a specialty oil. The oil also contains 47 percent oleic acid.

The quality of the oil meets all the fully refined edible oil specifications in terms of free fatty acid (FFA), peroxide value (PV), and moisture and impurities (M&I). Other palm oil fractions containing carotenes are commercially available by the same process. These include natural vitamin-rich edible oil (I.V. 52), natural vitamin-rich stearin (I.V. 33), natural vitamin-rich olein (I.V. 56) and natural vitamin-rich mid fraction (I.V. 44).

All these oils have already found many applications in the food and health industry and have gained importance in the international oils and fats market.

Tocotrienols as Potent Protectors of Subcellular Membranes Against Lipid and Protein Oxidation

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Phospholipids present in the cellular membranes are among the most important targets for free radicals formed under normal and pathological conditions. Peroxidation of such lipids is implicated in the etiology of several human diseases including cardiovascular disease and cancer. Hence, natural compounds (especially when present as dietary components) that can prevent such damage and thereby protect against resulting diseases have roles to play in the prevention and possible cure of ailments. In this aspect, tocotrienols from palm oil show great promise as possible natural antioxidant supplements. Tocotrienol-rich fraction (TRF) derived from palm oil and its components in the form of tocotrienols and tocopherols have been examined for their ability to protect against damage to phospholipids and proteins induced by three cardinal reactive oxygen species: hydroxyl radical, peroxyl radical and singlet oxygen. TRF effectively prevented lipid peroxidation and protein oxidation in subcellular membranes from rat tissues such as liver, brain and heart. The effective concentration of TRF needed for protection varies from five to 100μM in different tissues. Among the components, γ-tocotrienols were the most effective, followed by the α and δ isomers. Concentration-dependent and time course studies with the different subcellular membranes revealed that TRF and the individual tocotrienols were more effective than the dominant form of vitamin E, α-tocopherol. The protective effect of TRF is more pronounced against protein oxidation than against lipid peroxidation. It was revealed that TRF from palm oil can be considered as a natural dietary supplement capable of protecting both the crucial components of subcellular membranes – lipids and proteins.

Carotenes, Vitamin E and Sterols in Oils from *Elaeis guineensis*, *Elaeis oleifera* and their Hybrids

Y.M. Choo, A.N. Ma and S.C. Yap

Tenera (T) is the major commercial oil palm progeny planted in Malaysia. A cross between the dura (D) and pisifera (P), it belongs to the *Elaeis guineensis* family which originated in West Africa. The crude palm oil extracted from tenera oil palm consists of equal proportions of saturated (50 percent) and unsaturated (50 percent) fatty acids and is high in monounsaturates (39 percent).

About one percent of crude palm oil is made up of minor components. Amongst them are carotenoids, vitamin E (tocopherols and tocotrienols) and sterols. Their concentrations have been found to be 500-700, 600-1000 and 250-620 ppm respectively. The major carotenes present are α- and β-carotenes which constitute about 90 percent of the total carotenoids. Seventy to eighty percent of the vitamin E in palm oil is made up of tocotrienols. Among the sterols, β-sterol is the major one present.

Elaeis oleifera on the other hand, is high in monounsaturates (>50 percent) and di-unsaturates (>20 percent). The fatty acid composition of the backcross was found to be intermediate to those present in the parent species. Eleven types of carotenes have been found in the various palm species, namely α-carotene, β-carotene, phytoene, phytofluene, ζ-carotene, γ-carotene, δ-carotene, neurosporene, α-zeacarotene, β-zeacarotene and lycopene. α- and β-carotene constitute 24-42 and 50-60 percent respectively of the total carotenes present. *Elaeis oleifera* oil contains the highest carotene content (4300-4600 ppm). The high carotene content present can provide a good natural source of carotenoids. By using the supercritical fluid technology developed by PORIM, the oil extracted is free from residual solvents but enriched with carotenes and vitamin E which can be directly encapsulated for pharmaceutical applications and healthcare.

No significant difference in terms of the vitamin E content was observed among the different species. The variation in the total vitamin E content was mainly due to individual plant variation. The major vitamin E isomer is γ-tocotrienol. The major components of sterols in palm oil are β-sitosterol (61 percent), stigmasterol (23 percent) and campesterol (12 percent). Cholesterol (4 percent) is present in trace amounts. The sterol profile of oils from the various species were similar to each other. β-sitosterol (50-65 percent) was the major sterol present whereas cholesterol was present in trace amounts.

The high carotene content present in *Elaeis oleifera* can provide a good natural source of carotenoids

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In Brief

Trans Fatty Acid-free Vanaspati for Pakistan

Multinational food giant Lever Brothers is introducing a virtually *trans* fatty acid-free vanaspati into the Pakistan market under the name *Dalda*.

Developed at Unilever Laboratories in the Netherlands, *Dalda's* proportion of *trans* fatty acid is less than 1 percent. In comparison, other vanaspati products manufactured in Pakistan have *trans* fatty acid contents of 20-40 percent.

Dalda is the first major effort to reduce the percentage of *trans* fatty acid in vanaspati produced in Pakistan. Lever Brothers has invested over 20 million Rupees (US$357,000) in its edible oils refinery in Karachi and manufactures a range of cooking oils for the local market including *Dalda* cooking oil, *Dalda* sunflower oil and *Planta* margarine.

Arabic Label a Must for All Food Items in Oman

All food products wishing to enter the Omani market will have to carry an Arabic label.

Any food product found without the Arabic inscription detailing the ingredients, date of production, date of expiry and other details would be withdrawn from the market, stated the Director General of Commerce. A second violation would invite a ban on the product concerned.

Customs support would be obtained in not allowing entry of unlabelled products into Oman. Any goods entering Oman would have to meet with the country's standardised specifications and offenders would be taken to task.

Cholesterol-lowering Margarine to be Introduced to US Market

Benecol, a type of margarine that contains a wood pulp extract, proved effective in lowering cholesterol in a Mayo Clinic study.

The study found that the active ingredient in the margarine, plant stanol ester, which is flavourless and odourless, can lower the bad cholesterol (LDL) by 14 percent. The stanol ester works by inhibiting transport of cholesterol from the digestive tract to the liver, decreasing the amount of total cholesterol and LDL cholesterol in the blood.

The preliminary findings of the study was presented at the meeting of the American Dietetic Association in October 1998. *Benecol* is expected to be introduced to US grocers' shelves by medical giant, McNeil Consumer Products, by January 1999. Already approved as a dietary supplement, it does not require approval from the Food and Drug Administration.

Genetically Modified Canola

While most of the news about genetically modified oilseeds so far has been concerned with soyabean, there is increasing publicity on genetically modified canola. The Canola Council of Canada stated that canola varieties genetically modified to resist various herbicides could account for up to 50 percent of Canola's area in 1998.

The Council was forecasting that 5.3 million hectares of canola seed would have been planted in Canada in 1998. Of this, 2.6 million hectares will be genetically modified varieties, representing an increase of over 50 percent over 1997.

In 1997, 1.7 million hectares were planted with genetically modified canola varieties, of which 47 percent were glufosinate ammonium tolerant, 39 percent imidazolonone tolerant and 14 percent glyphosate tolerant. The Council anticipates that within five years, 75 percent of the canola area will be "novel-trait" varieties as they now call them.

In the European Union (EU), where initial consumer resistance to genetically modified crops was probably the greatest, active opposition appears to have virtually come to an end. This is because of three factors. First, the American soyabean exporters' insistence that segregation of genetically modified from unmodified varieties was impossible. Second, the EU authorities did not want to provoke a trade war with the US and third, the supermarkets gave an assurance that whenever possible, they would label foods containing modified crops accordingly and leave the choice to the consumer. In addition, opposition to genetically modified crops from the scientific community has been minimal.

Analysis

Leading food industry companies have called for harmonisation of regulations governing the use of genetically modified (GM) products that could be used on a worldwide basis. This is relevant as biotechnology is expected to have a big impact on society, and GM food crops are expected to cover at least 60 million hectares worldwide by the year 2000. Currently, about 28 million hectares of GM crops are being grown throughout the world.

In the US, about 20 million hectares have been planted with GM crops in contrast to only 3,000 hectares in the EU. This is because biotechnology is still a problem within the EU, mainly because of traditional attitudes towards food, the fears of globalisation, the strong influence of the green movement, and fear of "new" products.

Public confidence in food legislation has

been low especially since the handling of the bovine spongiform encephalopathy (mad cow) disease crisis. Ultimately, it will be up to the willingness of the consumer to buy food made from GM crops. Many had analysed that consumers would not buy these products. In reality, consumers have made no fuss about buying these products as long as they are properly labelled and their prices competitive.

Contributed by T.P. Pantzaris

Vitamin E, Antioxidants Prevent Brain Cell Death

Laboratory tests have shown that vitamin E prevents the death of brain cells exposed to a toxic protein found in the brains of patients with Alzheimer's disease.

The protein – amyloid beta peptide (AB) – is the major constituent of senile plaques found in Alzheimer brains. AB generates oxygen-free radicals that attack and kill brain cells, says Allan Butterfield at the Center for Membrane Sciences, University of Kentucky. He presented his findings at the national meeting of the American Cancer Society.

In his research, Butterfield added AB to the normal brain cells of test rodents and watched as all the cells died. He then pretreated rodent brain cells with vitamin E before adding AB. The vitamin E prevented oxidation and cell death in almost every case.

Another study done with Mark Mattson achieved even more dramatic results. In this experiment, Butterfield added AB to brain cells that had been genetically altered to produce antioxidants. All of the genetically altered cells survived.

In 1994, Butterfield first postulated that AB generates oxygen-free radicals that kill cells. His work has helped to promote further research to determine whether antioxidants such as vitamin E can keep the cells alive.

Positive Response to PORIM's 18th Familiarisation Programme

As part of PORIM's strategic business development programme to create awareness on palm oil amongst potential and existing consumer nations, it organised the 18th Palm Oil Familiarisation Programme (POFP) from November 2-11, 1998 in Kuala Lumpur. Thirty-one participants from 21 countries attended the programme.

The main objective of the 10-day programme was to familiarise and expose participants to the whole spectrum of the palm oil industry in Malaysia. This was done via lectures, demonstrations, interaction with representatives of industry and field visits. Visits were made to plantations, mills, refineries, downstream product manufacturers, as well as bulking and shipping facilities, to present the various aspects of the industry.

The programme's objective was for participants to be able to appreciate the commitment of all sectors of the industry towards producing palm oil of the highest international quality and standard.

Based on the participants' evaluation, PORIM's efforts have been worthwhile. Their feedback stated that the lecture sessions provided valuable information on palm oil and that the interactions were fruitful and mutually beneficial. With this programme, PORIM's POFP has now benefited 566 participants from 75 countries.

While it is recognised that many factors have contributed towards the prolific trade in palm oil over the years, many within the industry have attributed palm oil's dominance to the strategic role of PORIM's POFP.

Contributed by Rosnah Hussin

Participants visited a refinery as part of the POFP

18th POFP participants with Deputy Minister of Primary Industries Malaysia (seated 5th from left) and PORIM's Director-General (4th from left)

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PORIM's exhibition programme in the United States allows it to meet customers of the Malaysian palm oil industry and interested parties from North and South America, showcase the latest products and new developments, discuss needs, and answer queries. So visit us at PORIM Americas' booth at the following shows:

- AOCS Annual Meeting & Expo, Orlando, Florida
  May 9-12, 1999
- IFT Annual Meeting & Expo, Chicago, Illinois
  July 24-28, 1999

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