PALM OIL technical bulletin

Vol. 1 No. 1 October 1994

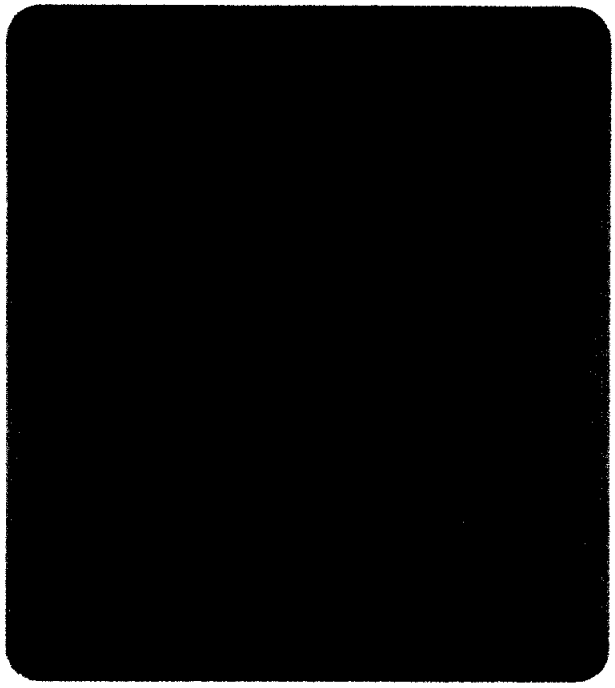
IN BRIEF

TAS ACTIVITIES

Month	Place	Purpose
December	Saudi Arabia and the UAE	TAS visits
	South China	TAS visits

- The USDA has granted Mexico an increase of US$200 million under the Commodity Credit Corporation's Export Credit Guarantee Program (GSM 102) for the fiscal year 1994. Commodities involved include soyabean, cottonseed and sunflowerseed meals.

- The NIOP Technical Committee has completed the project to establish a listing entitled : National Institute of Oilseed Products & Federation of Oils, Seeds, and Fats Association Joint List of Acceptable Previous Cargoes. (A copy of the listing is available at TAS Headquarters.)



STUDIES PROVE PALM OIL IS HEALTHIER*

by

Dr Yusof Basiron and Dr K H Loke

In 1917, when oil palm was planted commercially for the first time in Malaysia, the pioneers could not have foreseen the major contribution it would eventually make to the nation's prosperity.

In the Sixties, the growth of the industry received fresh impetus when the Government embarked on a massive agricultural diversification programme. Land under rubber was converted to oil palm cultivation and new land was also opened up for the same purpose.

Today, Malaysia has about 2.2 million hectares under oil palm cultivation, some 270 mills to extract the oil from the fruit bunches, 40 refineries to process the crude oil into refined, bleached and deodorised (RBD) palm oil and an entire infrastructure to market, export and trade in palm oil products.

From a few hundred thousands tonnes in the late Sixties, annual crude palm (mesocarp) oil production had climbed to 7.4 million tonnes in 1993. The corresponding production of crude palm kernel oil amounted to about 0.9 million tonnes. Processed palm oil, together with palm kernel oil, has constituted the country's third export dollar earner in recent years.

Palm oil accounted for about 35 per cent of the international fats and oils trade in 1993. Malaysia's share of the palm oil trade was about 76 per cent.

Strong competition from other edible oils, evident in the early Eighties was to trigger an anti-tropical oils (including palm oil) campaign by the American Soyabean Association (ASA) in late 1986.

This campaign was meant to serve trade but was disguised as a crusade on health grounds.

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A Publication of the Palm Oil Research Institute of Malaysia (PORIM)
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Currently, about 90 % of palm oil goes into food applications and the remaining 10 % into non-food or technical uses such as soaps, detergents and other industrial oleochemicals.

Palm kernel oil mostly serves as feedstock for the oleochemical industry though a significant amount ends up in specialised food products.

Apart from its direct use in cooking and frying, palm oil is also used in the manufacture of margarine, shortenings, spreads, vanaspati, confectionery fats, and filled milk.

As more people become conscious of health and nutrition, many have been persuaded to reduce the intake of foods that contain cholesterol or that can raise blood cholesterol in order to minimize the risk of heart disease.

Nutritional studies in the Sixties established that dietary saturated fats raise blood cholesterol, while polyunsaturated fats lower it. Since palm oil has long been classified a saturated fat for no valid reason, the idea that its consumption may be bad for health has unfortunately gained currency among scientists and the public.

Because of this, the Palm Oil Research Institute of Malaysia (PORIM) initiated a research programme on the nutritional properties of palm oil with the objective of establishing its wholesomeness and reassuring consumers of its safety.

The programme focused on the effects of palm oil on plasma cholesterol, atherosclerosis and thrombosis; its effects on experimental carcinogenesis; as well as the effects of minor components of palm oil, particularly the carotenoids and vitamin E.

In studying the biological effects of palm oil, a comparison was made with other edible fats and oils.

In all animal-based studies, it was found that serum total cholesterol levels of animals on palm oil-based diets were not significantly higher that in corn oil-fed animals. This was an encouraging finding as it showed in the rat model, the cholesterolemic effect of palm oil was about the same as that of a typical, polyunsaturated oil.

Observations from other studies were also consistent with the hypothesis that polyunsaturated fats promote, while fats of lesser unsaturation (greater saturation) retard, mammary cancer development and progression.

In retrospect, these animal studies are important as their results gave us confidence that in palm oil, we have an edible oil that is likely to be wholesome to humans and to possess nutritional properties almost equal to, and in some respects superior to, those of the polyunsaturated oils.

This confidence was soon put to the test when in late 1986, the ASA and certain health and consumer groups in the US mounted the anti-tropical oils campaign. The institute, faced with the need to intensify and accelerate the research programme, committed substantial funds to support projects by external investigators to obtain information needed to counter the smear campaign.

At the time, there were available only four reports on dietary intervention studies in humans evaluating palm oil. Conducted in the US, the studies showed that subjects on a palm oil diet had serum total and LDL-cholesterol levels higher than those on a polyunsaturated oil diet. However, serum total cholesterol levels after the palm oil regimen were in fact lower than baseline levels i.e. when the subjects were on their habitual diets. However, the latter fact was conveniently ignored by the anti-palm oil campaigners.

The defence for palm oil, being meagre and weak, was seen to need buttressing to withstand the onslaught launched at almost all conceivable levels. Attacks were also made in other countries, where the established market for soyabean oil was being challenged by palm oil, and by proxies.

Costly human intervention studies were commissioned in several countries and by July 1989, when the American Soya bean Association agreed to call off the smear campaign against palm oil, a few studies, all attesting to the safety and wholesomeness of palm oil, were completed.

The research programme in palm oil nutrition was however maintained and to date, 86 research projects have been implemented. These efforts have yielded a core of

fundamental and applied knowledge pertaining to the nutritional effects of palm oil, which can be summarised as follows:

- A palm oil-enriched diet does not raise plasma cholesterol compared to the habitual fats consumed by the populations of the countries concerned. In some cases, a palm oil-enriched diet even results in lower plasma cholesterol levels. Palm oil feeding also modulates the LDL-cholesterol to HDL-cholesterol ratio in a beneficial manner.

- In animal studies, a palm oil-enriched diet has been found to reduce the tendency of blood to clot, thereby minimising the risk of thrombosis.

- A palm oil-enriched diet confers a protective effect on animals with experimental breast cancer, as evident from a lengthening of the latency period and a decrease in tumour number compared to animals fed polyunsaturated oils.

- Tocotrienols, the unsaturated analogues of tocopherols present in palm oil, have been shown to suppress cholesterol biosynthesis in the liver, to act as powerful antioxidants, to prevent platelet aggregation and to reduce the thromboxane:prostacyclin ratio. Preliminary data also point to their anti-cancer action.

- The carotenoid components of unrefined (red) palm oil have antioxidant and anti-cancer roles in the body.

In the light of such findings, therefore, the claim that palm oil is harmful to human health cannot stand. However, to effectively counter the charge that palm oil consumption raises blood cholesterol and is thus deleterious to human health, the results of earlier studies on animals need to be carried out on humans as well.

Beginning in late 1986, a number of human dietary intervention studies were implemented. Since the amount of dietary fat consumed and consumption patterns vary from one country to another, and since all palm oil consumers need to be reassured of its safety, PORIM commissioned human studies in Malaysia and countries which import palm oil.

Malaysians, prior to the late Eighties, consumed a variety of fats and oils, e.g. coconut oil, peanut oil, corn oil and lard. By 1988, palm oil had become the premier edible oil consumed, accounting for nearly 66 per cent of the total edible oil market.

Quantity-wise, daily dietary fat intake has climbed over the years from 20 per cent (typical of rural communities) to 25 to 30 en % (energy per cent). Nowadays, some Malaysians may have a dietary fat intake approaching that in the West (35-40 en %) which may account in part for the increasing incidence of the so-called diseases of affluence like coronary heart disease (CHD), stroke, hypertension and diabetes.

With palm oil supplanting coconut oil and other edible oils as the staple dietary fat among Malaysians, it was natural that the first human study commissioned in Malaysia addressed the question of whether this replacement has been for the good of Malaysians or not.

Conducted by Ng and co-workers of the Institute of Medical Research (IMR), Malaysia, this study found that compared with coconut oil, palm olein and corn oil significantly lowered serum cholesterol.

IMR investigators also conducted another study comparing palm oil and olive oil which led them to the conclusion that, among other things and under certain conditions, palm olein is nutritionally equivalent to olive oil - a highly-rated healthy edible oil.

Mention must be made of non-PORIM study conducted by Marzuki and his co-workers from Universiti Kebangsaan Malaysia. They found that in male adolescents, palm olein diets did not significantly alter plasma total, LDL- and HDL-cholesterol concentrations or the ratio of total cholesterol to HDL-cholesterol when compared with a soyabean oil diet.

However, in contrast to soyabean oil which was found to decrease both apolipoprotein A-I and B concentrations, palm olein significantly increased these two apolipoproteins by 11 per cent and nine per cent respectively. These researchers also found that when the same diets were fed to hypercholesterolemic subjects, the

soyabean oil diet induced higher total and LDL-cholesterol levels than the palm olein diet.

Khan and co-workers of the Pakistan Council of Scientific and Industrial Research, Lahore, found in a comparative study on RBD palm oil and habitual fats in the Pakistani diet (vegetable ghee, vanaspati and partially hydrogenated cotonseed oil) that palm oil exerted a cholesterol-lowering effect not shown by the other three test fats.

The relationship between dietary palm oil, soyabean oil and beef tallow, and atherogenesis in human subjects was investigated by Yoon and co-workers of the Korea Food Research Institute in Seoul. No difference were observed in the serum total lipids and serum cholesterol in subjects fed palm oil, soyabean oil or beef tallow. However, the levels of HDL-C were raised in the palm oil-fed group.

Platelet aggregation rate (PAR) and the thromboxane:prostacyclin ratio were found to be decreased after palm olein feeding, whereas no change was observed with soyabean oil and an increase was seen after beef tallow feeding.

Palm oil was also evaluated in Europe by Hornstra and co-workers of Limburg University, Masstricht, the Netherlands. The Dutch population, like other European, tend to consume a high fat diet consisting of mainly dairy fat and hydrogenated fats. In the trial, the habitual fat of this population was replaced with palm oil (up to 70 per cent replacement) and subjects were fed the two diets for six weeks each in a double blind cross-over design. Serum lipids, lipoproteins and apolipoproteins were monitored. It was found that the palm oil diet did not raise serum total and LDL-cholesterol. In contrast to the habitual fat diet, palm oil caused a significant increase in the beneficial HDL-cholesterol and a significant reduction in the triglycerides of the atherogenic LDL-fraction. This nett beneficial effect (a higher HDL-C/LDL-C ratio) was also reflected in a higher level of apolipoprotein A1 in relation to apolipoprotien B.

The overall conclusion of the Maastricht study is that palm oil can be used to replace the habitual fat of a Western-type diet without fear of a deleterious effect on serum lipid and lipoprotein profiles.

How palm oil affects serum lipids in relation to other dietary fats consumed in the United States was studied at two research centres. In a study by Heber and co-workers at the University of California, Los Angeles, healthy male subjects consumed muffins and/or cookies made with hydrogenated soyabean oil, palm oil or coconut oil for three three-week periods in random order and blood samples were removed at the end of each period for analysis.

It was found that serum cholesterol, LDL-cholesterol, apolipoprotein A and apolipoprotein B levels in subjects consuming palm oil or hydrogenated soyabean oil did not change significantly. The amount of palm oil consumed by the subjects involved in the study was 20 times the relative amounts found in the usual American diet. As such, the finding suggests that there is no basis in the claim that palm oil consumption may be an atherogenic risk in the American context.

The other study was conducted by Wood and co-workers of the Texas A & M University. It was also found that palm oil did not raise serum cholesterol relative to baseline values and that refined palm oil increased HDL-cholesterol and decreased apolipoprotein B significantly, while crude palm oil decreased apoliprotein B and LDL-cholesterol significantly.

In contrast, the butter diet caused a small but significant elevation in serum total and LDL-cholesterol, with no change in the HDL-cholesterol significantly. The hard stick margarine diet lowered serum total cholesterol significantly, but LDL-cholesterol was not deceased significantly. On the other hand, HDL-cholesterol was lowered relative to baseline values.

Of the remaining test fats, sunflower seed oil was found to bring about the greatest reduction in serum total and LDL-cholesterol. However, there were undesirable concomitant reductions in the levels of the beneficial HDL-cholesterol and apolipoprotein AI.

Finally, the palm oil and sunflower seed oil blend did not produce any change in serum lipid or lipoprotein concentrations. Thus the picture that has emerged is that palm oil compares favourably with the habitual fats consumed in America.

Palm olein and canola oil were compared in a study conducted by Truswell and co-workers of the University of Sydney. Potato chips fried in palm olein and canola oil were separately fed to normal human subjects.

Comparable cholesterolemic effects were found for the two test fats. The mean three per cent rise in total cholesterol observed in the palm olein feeding was shown to be mainly due to a 10 per cent (beneficial) rise in HDL-cholesterol.

All these studies have been published since 1989 and reviews by local and foreign experts have also appeared in the past two years. These new findings on the nutritional properties of palm oil have become generally known among workers in the field. Continual efforts are being made to get this new information disseminated.

PROOF THAT PALM OIL IS WHOLESOME

The effects of palm oil and the Chinese habitual dietary fats (soyabean oil, peanut oil and lard) on blood lipids and thrombotic parameters were compared in a study conducted by Ge and co-workers of the Institute of Nutrition and Hygiene in Beijing.

After a three-week pretest period of soyabean oil, groups of subjects were fed for six weeks on the test fats. Lipid data at the entry, middle and completion stages were compared to data of the soyabean oil (control) group. Serum total cholesterol of lard-fed subjects were higher than baseline/control (29 mg/dL more). Palm oil was nutritionally better than soyabean oil, total cholesterol being 10 mg/dL less and HDL-cholesterol 6.1 mg/dL more. On the other hand, peanut oil was marginally inferior to soyabean oil, total cholesterol being 3mg/dL more and HDL-cholesterol 3mg/dL less. The thromboxane: prostacyclin ratio obtained in the palm oil group was not significantly different from that of the soyabean oil group and was significantly lower than those of the peanut oil and lard groups.

Palm olein and peanut oil were also evaluated in a study conducted by Reddy and co-workers of the National Institute of Nutrition, India. In both short-term and long-term studies, the two oils were found to be comparable with regard to their cholesterolemic effects.

A third study by Wood of the Texas A & M University investigated the effects of palm olein, the fat present in the average American diet and the fat in the American Heart Association (AHA) Step One diet (one with saturated:monounsaturated:polyunsaturated fatty acids in the proportions of 1:1:1) in normocholesterolemic and hyperlipidemic men. No significant differences were observed in the serum total, HDL-choleserol, LDL-cholesterol and triglyceride concentrations of subjects fed these types of dietary fat, suggesting that palm olein can be safely consumed in place of the fat present in the average American diet and can match the AHA Step One dietary fat in nutritional effects.

The study of the cholesterolemic effects of edible fats and oils has also been approached by evaluating the effects of individual fatty acids contained in the dietary oil. From such studies has evolved the concept that the saturated fatty acids lower blood cholesterol. Monounsaturated fatty acids such as oleic (18:1) acid were considered neutral, i.e. they do not raise or lower blood cholesterol. Of the common saturated fatty acids found in fats and oils, stearic acid (18:0) has been shown to be neutral due partly to its bioconversion into oleic acid. The remaining common saturated fatty acids - lauric (12:0), myristic (14:0) and palmitic (16:0) acid - were, according to Keys and Anderson, equally hypercholesterolemic.

Another school of thought led by Hegsted considered myristic acid to be the most hypercholesterolemic of the three.

Hayes and co-workers of Brandeis University, Massachusetts, examined this controversy in non-human primates (monkeys), comparing dietary fats rich in 12:0 + 14:0 fatty acid (coconut oil) with those rich in 16:0 acid (palm oil). In an elegant and well-designed experiment, they showed that the 16:0 acid is non-hypercholesterolemic (neutral) when compared to the 12:0 + 14:0 acids. As the 12:0 + 14:0 acids were progressively replaced by the 16:0 acid, the blood cholesterol concentrations approached those observed in the animals fed the palm oil/palmitic acid diet.

The finding that palmitic acid, which is the predominant saturated fatty acid in palm oil (45 per cent), is neutral or

non-hypercholesterolemic in the non-human primate is important and needs confirmation in man. Working with co-investigators of the Malaysian Army, Sundram of PORIM conducted a study on 17 healthy male volunteers at the Sungei Besi military camp. The volunteers were fed diets with 50 per cent of the total fatty acids as 12:0 + 14:0 acids (coconut/palm kernel oil as source) or 16:0 acid (palm oil or palm stearin as source). The contents of monounsaturated fatty acids of both the test diets were held constant.

The diets were fed to volunteers for four weeks each according to a double blind crossover design. The resultant blood lipid data showed that volunteers fed the 16:0 diet had significantly lower serum total and LDL-cholesterol concentrations than those consuming the 12:0 + 14.0 diet - confirmation of the non-human primate study in man. HDL-cholesterol levels were unaffected in both dietary groups.

The equivalence in cholesterolemic effects of palmitic and oleic acid observed first in monkeys by Hayes and co-workers, and then in man by the IMR investigators, was further investigated by Sundram. Diets enriched with 16:0 (palm olein), 18:1 (rapeseed oil) and the AHA Step One diet were fed in rotation to 23 volunteers at the Sungai Besi military camp. As expected, serum total and LDL-cholesterol levels were found to be unaffected by all the three diets. The AHA diet, however, was found to significantly increase the HDL-cholesterol concentration, with the resultant lowering of the LDL-cholesterol:HDL-cholesterol ratio.

Previously, the paucity of scientific work on the nutritional properties of palm oil was an obstacle to convincing the medical and health communities as well as consumers that there was nothing wrong with it when consumed directly or indirectly. However, after a decade of sustained research efforts by PORIM, backed by collaboration from nutritional scientists worldwide, there is now solid and scientifically sound evidence from human studies to disprove the claim that palm oil raises blood cholesterol and that its consumption presents a risk to cardiovascular health.

These human studies as well as the animal studies, which are not reviewed here, on the cholesterolemic effect of palm oil have however a greater significance than just disproving the claim of anti-palm oil campaigners, or, conversely, proving its safety and nutritive value. They also contribute to the pool of knowledge concerning the general metabolism of fats and oils.

Thanks to our studies and those by other scientists, we are beginning to understand the reasons for the observed beneficial effects of palm oil on the cardiovascular system. Systematic mechanistic studies either already implemented or on the drawing board should provide the answers to the question of why palm oil runs counter to the dogmatic belief that it is a cholesterol-raising fat.

In these days of health consciousness, it is not uncommon for patients to seek dietary advice from their doctors. In the case of dietary fats, the questions usually asked are "How much fat should I consume?" and "What type?" In response to the first question, the doctor would recommend that the total fat intake be 30 per cent or less of calories, while to the second question, the answer would generally be to consume polyunsaturated fat and to reduce saturated fat or fatty acid intake to less than 10 per cent of calories, plus keeping the cholesterol intake to less than 300 mg daily.

This recommendation to opt for a diet rich in polyunsaturates and to eschew one rich in saturates is made with good reason. For one thing, numerous experimental studies have shown that a diet rich in polyunsaturated fatty acids – such as those found in corn, soyabean, safflower seed and sunflower seed oils – lower serum cholesterol. For another, polyunsaturated fats are good sources of the essential fatty acids (linoleic and linolenic acids), which our body cannot synthesis and which have very important biological functions.

However, this recommendation must be viewed with some caution in the light of recent findings on polyunsaturated oils. For, while lowering serum cholesterol, polyunsaturates reduce concomitantly the beneficial HDL-cholesterol levels. Excess consumption of polyunsaturates is associated with gallstone formation, suppression of immune response, cancer promotion and, possibly too, atherosclerosis. The latter process is now believed to involve oxidative modification of LDL-cholesterol to a more atherogenic form.

It has also been shown that LDL samples isolated from subjects fed a diet rich in linoleic acid were more susceptible to peroxidation than samples from subjects fed an oleic acid-rich diet. These facts have been taken cognisance of by the American Heart Association, which has since modified their earlier recommendation of a 1:1:1 proportion of saturates: monosaturates: polyunsaturates to 1:1.3:0.7.

Linoleic and linolenic acids by virtue of the presence of the 1,4-pentadiene system in their structure are prone to oxidative attack, while oleic acid, with its single double bond, is relatively stable to oxidation. This property, couple with the more recent finding by Grundy that oleic acid is hypocholesterolemic and not neutral as previously believed, has propelled the oleic acid-rich vegatable oils into prominence in recent times with a variety of food product such as margarines and spreads based on these oils on sale at the supermarket.

To widen the scope of their food applications, polyunsatured oils are converted to more solid forms by catalytic hydrogenation. Because of saturation of the double bonds, the hydrogenated oils are also less, or no longer prone to, oxidative rancidity and hence have a longer shelf life. However, in the catalytic hydrogenation of the unsaturated oils, geometrical and positional isomers of the unsaturated fatty acid moieties are also formed, the biological effects of which are unknown and need to be investigated.

This question had been addressed as catalytic hydrogenation became an established technology in food processing, especially in the manufacture of margarine and shortenings. The trans isomers of the cis-fatty acids commonly found in vegetable oils were studied and were shown to inhibit the activities of certain membrane-bound enzymes involved in prostacyclin metabolism, promote platelet aggregation and adversely affect the reproductive biology of animals as reflected in smaller litter size, irregular oestrous cycles and abnormal sperm. However, laboratory studies on the adverse effect of transfatty acids on cardiovascular risk factors were inconclusive. Thus, while there was lingering suspicion of a possible causative relationship between trans isomers and CHD, the edible use of hydrogenated fats and oils continued unabated.

Concern was re-kindled when Mensink and Katan, in a paper published in the New England Journal of Medicine in 1990, reported that trans fatty acids can increase serum concentrations of LDL-cholesterol and lower concentrations of HDL-cholesterol. These findings have since been confirmed in four studies, one by the same team and co-workers, one by scientist of CSIRO, Australia, and the remaining by two separate groups of investigators in the United States. The elevation of lipoprotein(a) - an independent risk factor for CHD - by trans fatty acids was also reported in two of these four studies. More recently, Willett et al., of the Harvard Medical School, reported the findings of their epidemioligical study among women, which support the hypothesis of a link between the intake of trans fatty acids and risk of CHD. Thus evidence on the adverse effect of trans fatty acids on serum cholesterol is accumulating and this may necessitate a review of the industrial practice of partially hydrogenating vegetable oils to produce solid fats.

In this connection, it is interesting to recall that at the height of the anti-palm oil campaign, US food processors, in response to consumer pressure, substituted hydrogenated vegetable oils for palm oil, which needs no hydrogenation by virtue of its balanced fatty acid composition and semi-solid nature.

Now that it is shown that the hydrogenated oils with their content of trans fatty acids may contribute to the occurrence of heart disease, these processors are faced with the dilemma of whether or not to switch back to using palm oil in order that consumers reap the anticipated benefits of substituting palm oil for the hydrogenated fats. For, as earlier shown in the Maastricht study, 70 per cent replacement of the Dutch habitual fat, which is known to contain a significant proportion of hydrogenated fat, resulted in a favourable shifting of the LDL to HDL ratio as well a reduction of lipoprotein(a) concentration.

Palm oil, by itself, is already used in a wide range of food applications. In combination with other natural oils, its applicability will be considerably extended. Its inherent technical properties, price competitiveness and regular availability in the world fats and oils market have made it the oil of choice for importation, especially by countries deficient in edible oil.

Palm oil's success resulted in a smear campaign based on the claim that being a saturated fat, palm oil would pose a risk to cardiovascular health if consumed. Now that nutritional studies of the past decade have established its safety and wholesomeness, palm oil has cleared a formidable hurdle to its universal acceptance as the oil of the future.

REGIONAL NEWS

TAS Unit, HQ

THE SOAP WARS

In the past, powdered detergents were considered a rare luxury in India. The majority of the population used laundry soap bars to wash their clothes. Karsan Patel's low-cost powder named 'Nirma', was an instant hit when it was first introduced in 1969. During the next three years 100 kilograms of powder were churned out daily. By 1982, revenues had swelled to US$12.9 million from a mere US$32.258 in 1972.

Nirma's unexpected success stunned the giant Hindustan Lever Ltd (HLL) which finally introduced 'Wheel', its own cheap, powdered detergent in the mid 1980s; however it has still not dislodged Nirma from the top position.

The market continues to grow. The Government estimates that India's current US$1.3 billion detergent market will double by the year 2000 and triple by 2005, which should make India the largest detergent powder market in the world.

With new entrants such as Spic Fine Chemicals Ltd., Tata Chemicals Ltd. and Colgate-Palmolive India Ltd., and with mergers between HLL and Tata Oil Mills Co. (TOMCO) and between Procter & Gamble India Ltd. and Godrej Soaps Ltd., can Nirma retain its leading 40 % market share? Some people are sceptical. But the producers of Nirma are quite optimistic about its future because people acquire tastes that are difficult to change: it is not easy to kill an established market. Moreover, foreign products well-known elsewhere are not recognizable in India, so that the multinationals will have to incur huge expenditure on advertising in attempting to break in.

The company making Nirma is also diversifying : It plans to manufacture soda ash and linear alkyl benzene detergents, matches, salt and packaged tea, while products to compete with other premium detergents are also being planned. The strategy will be the familiar one: to offer a product of comparable value at a lower price.

By contrast with the multinationals' faith in the growing sophistication of Indian consumers, Nirma will maintain its focus on the mass market : particularly rural areas. This may well be right : surveys conducted by the National Council of Applied Economic Research reveal that the use of detergent powder in rural areas is low but that sales there are growing at 35 % annually compared with 16 % in urban areas.

TAS Brickendonbury

PROSPECTS IN EASTERN EUROPE AND THE FORMER USSR

With the collapse of the communist economies of Eastern Europe and the USSR and their conversion to capitalism, barriers to trade have more or less disappeared and PORIM has been paying increasing attention to the prospects for increased palm oil imports into this area.

The main obstacle to overcome now is the desperate shortage of hard currency reserves in the countries concerned, but industrial reconstruction is proceeding apace, and from past experience we know that palm oil imports follow economic development very closely. A good measure of the rate of economic development and therefore of prospects for imports of palm oil is given by the amount of foreign investment going to these countries, and *Table 1*, showing figures issued recently by the European Commission, is instructive.

TABLE 1. NET INFLOWS OF DIRECT FOREIGN INVESTMENT 1992-93 (AVERAGE US$ PER CAPITA)

Hungary	130
Czech Republic	75
Slovenia	70
Estonia	46
Latvia	18
Slovakia	15
Kazakhstan	15
Poland	11
Russia	5
Ukraine	4

REGIONAL NEWS

PALM OIL REGAINS ITS MARKET IN RUSSIA

The conclusion of the palm oil-MIG deal in June caused some excitement in Russia, according to the marketing officer at the Malaysian Trade Commissioner's office in Moscow, who is himself a Muscovite. The agreement will give Russians the opportunity to use palm oil again and will also open numerous opportunities for small businesses in the new free economy. The Russians are enterprising people but, sadly, the old political system did not given them much opportunity for enterprise.

According to the USDA office in Moscow, Russian oilseed production declined in 1993 by nearly 13% to 3.29 million tonnes.

Vegetable oil production declined by 8% to 996 000 tonnes and margarine production is estimated to have fallen 20% to 467 000 tonnes. With such declines, vegetable oil imports are estimated to have reached 200 000 tonnes, a rise of 100% year-on-year. However, vegetable oil imports have been a major problem in Russia owing to the lack of foreign exchange and the ending of government subsidies. The palm oil-MIG deal should help alleviate the shortfall in margarine production.

The 180 000 tonnes of palm oil to be delivered over a period of five years is a small amount compared with the 400 000 tonnes the USSR imported in 1989. This, however, is only the beginning. It may be noted that several years ago, PORIM advocated long-term palm oil contracts with countries which were potential buyers but which lacked foreign exchange.

PORIM has finalized an agreement with Soyuzmargarinprom (the Association of Russian Margarine Manufacturers) for a collaborative project to develop and expand the use of Malaysian palm oil in Russian margarine, shortening and other food products. In the first phase of this project, three Russian margarine specialists are expected to work in PORIM's laboratories for a period of one month.

TAS Karachi

IMPORT DUTY CONCESSION ON PALM STEARIN

The Government of Pakistan has recently allowed the duty-free import of palm stearin solely for use as a raw material for the oleo-chemical industry. Pakistan has one oleo-chemical plant at Lahore with a capacity for fat-splitting of 2000 tonnes per month.

This development will have a negative effect on the importation of fatty acids into Pakistan from Malaysia or from China. But it will obviously result in the import of more palm stearin. It is also learnt that the Pakistan Soap Manufacturers' Association is approaching the Government to extend the import tariff concession on palm stearin to the soap industry as well. However, the chances of this request's being accepted seem very small.

Palm stearin carries an import duty of Pak Rs. 10 000 (US$ 322) per tonne and its import is subject to the condition that the product should be distinctly coloured to differentiate it from RBD products. This condition still applies to duty-free imports of palm stearin by the oleochemical industry.

TAS Washington

US NUTRITIONAL LABELLING AND EDUCATION ACT (NLEA)

The Nutritional Labelling and Education Act (NLEA 1990) states that the discriminatory labels 'No Palm Oil' and 'No Tropical Oils' on food packages are prohibited after 8 May 1994. However, Dr Edward Scarborough, (the Director of the Office of Nutrition and Food Science of the Center for Food Safety and Applied Nutrition, USFDA) explained that on 18 May 1994 the US Senate passed legislation (introduced by Senator Bumper) extending the date for compliance to 8 August 1994.

The possibility of trans fatty acids being associated with coronary heart diseases has been very much in the news both in the printed media and on TV. This has prompted

REGIONAL NEWS

the Center for Science in the Public Interest (CSPI), a consumer group, to petition the FDA to have trans fats labelled under the NLEA.

On the labelling of Trans Fatty Acids, the FDA's contention is that: 'Trans Fatty acids should be classified based on their chemical definition and not be grouped together as saturated and partially saturated fats by virtue of the process of full and partial hydrogenation, respectively, as petitioned by CSPI.'

Labelling trans fatty acids as saturated or partially saturated fats as petitioned by CSPI, would be misleading to consumers. This FDA position will be advantageous to palm oil which, contains no trans fatty acids.

Food industries in the USA are showing increased interest in palm oil. Vigorous marketing strategies must be adopted. Perhaps a target of 450 000 tonnes of palm oil imports into the USA can be set. More palm oil seminars will be organized for food manufacturers on a regional basis, especially in California and the West Coast.

All information regarding the technical advantages of palm oil as an alternative natural hard stock in formulations for trans free margarine and shortening will be assembled and transmitted to all potential users. Formulations for trans free margarine and shortening products using blends containing palm oil and palm olein products will be made available for distribution and on request.

FASEB CONVENTION

The convention of the Federation of American Societies of Experimental Biology (FASEB) is an annual meeting of professional scientists jointly organized by several different societies representing physiologists, pharmacologists, pathologists, immunologists and the American Institute of Nutrition (AIN).

The convention held from 24 to 28 April 1994 at Anaheim, CA of particular importance, because information and research findings presented at that meeting are to be the basis for a report by the Surgeon General . The occasion was well attended by AIN members, including its President.

With the emergence of the trans fatty acid issue, palm oil is gaining a much better image as a source of hard stock for trans free margarine and shortening formulations, as already noted above. The 'Malaysian Palm Oil' booth at FASEB, manned by PORIM & MPOPC staff, received a lot of technical enquiries throughout the convention.

In future, PORIM will be contributing more papers on the nutritional attributes of palm oil.

SCIENCE

Nutrition

FDA POLICY STATEMENT MENTIONS BIO-CANOLA

Four scientists with the US Food and Drug Administration recently published 'Plant Biotechnology and Food Safety', an FDA policy statement on new developments in plant technology and their implications for food safety. The authors, Z.S. Olempska-Beer, P.M. Kuznesof, M. DiNovi, and M.J. Smith included a section on Trends in Plant Biotechnology and Safety of Food Components.

Under Trends in Plant Biotechnology, the authors noted that several recently isolated genes involved in fatty acid synthesis may be used to develop oilseed crops that would produce oils tailored to the specific needs of the food industry, e.g. canola oil with a high content of stearic acid for use as a cocoa butter equivalent or stock for margarine production. The food industry is also interested in developing alternatives to tropical oils (coconut and palm kernel oils), which are rich in lauric acid. A lauryl-acyl carrier protein thioesterase gene derived from seeds of undomesticated California bay has been expressed in canola. The transgenic canola seeds accumulated high levels of lauric acid.

The authors also noted that, 'Recombinant DNA techniques will undoubtedly be used to introduce further modifications in the fatty acid composition of vegetable oils. The initial modifications are expected to result in fats and oils similar or equivalent to those already being consumed. Margarine produced from canola oil rich in stearic acid would be one such product.'

ENQUIRY

Technical

Q1: **What is the advantage of using hydrogenated PFAD instead of PFAD in animal feeds?**

Q2: **What is 'yield value' and how is it measured?**

A1: Standard PFAD fed to ruminants (cows and similar animals) behaves like any ordinary fat, i.e. it is acted upon by bacteria and enzymes present in the rumen and is digested there.

Hydrogenated PFAD is protected by its high melting point from digestion in the rumen, which in a sense it by-passes, and it is digested in the abomasum and the small intestine. It is therefore called a 'protected fat' or a 'by-pass fat'. Such products are specialities which sell at a higher price. Hydrogenated PFAD also contains higher amounts of 18:0, which can increase the production of milk in cows.

A2: The yield value indicates consistency (softness/firmness) of a solid fat product such as shortening or margarine. By using the penetrometer reading, the yield value can be calculated using a certain formula.

COMMERCIAL

An enquiry has been received from the Central Asian Republics for immediate imports of palm products.

Interested Malaysian palm oil refiners or exporters can contact the relevant parties directly. They are:

Continued next page

KAZAKHSTAN

- Ministry of Trade & Industry - Almaty
  Tlx : 251203 RUBIN
  Fax : (8) (3270) 629801
  Tel : 624464

  Contact persons
  i) Mr Almasbak S. Usenove
  - *Deputy Minister of Trade*
  ii) M.D.M. Sagimekova Maira
  - *Chief of Food Products Department*
  iii) Director of External Trade

  Product
  RBD palm olein in 180 kg drums
  (In 20 or 40 containers)

KAZAKHSTAN

- Hollyford Trading Ltd. - Almaty
  Tlx : 921646 UMEE
  Fax : 44-81-201-3408
  Tel : 44-81-201-3422

  Contact persons
  i) Mr Vukanovich Velimir
  - Director
  ii) Mr Denis Kosovac
  - Senior Manager

  Product
  Industrial-grade palm oil
  (In drums)

KYRGHYZSTAN

- Kaniet Impex
  (Foreign Economical Company Joint Stock)
  Fax : (3312) 22-18-24
  Tel : 22-68-96

  Contact person
  Mr Bazakeev Kubanichbek Jamanchaevich
  - *Managing Director*

  Product
  RBD palm olein in 180 kg drums and in 1 l bottles
  (In containers)

For more information please contact :
Dr Hamirin Kifli
Tel : 03-8259155/8295952
Telex : MA 31609
Fax : 03-8259446

EDITORIAL COMMITTEE MEMBERS

We invite readers to send in comments, suggestions and technical enquiries which could be published in this newsletter.