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Editor's desk

India imports two third of its domestic demand of edible oil. As per recent Indian Edible Oil Market Analysis for year 2019-2025, it has been estimated the Indian edible oil market will experience CAGR of 8.75% by revenue and 9.88% by volume during 2019-2025. This estimation is based on analysis of brand share, market share, value chain of major oil producers of India. The report has also taken market size, market driving aspects and market restring aspects into consideration. This year also due to fluctuating pattern of rain fall, the production of Indian oil seed may be lower than expected and it will lead to higher import of edible oil.

In the month of September based on investigation of DGTR (Directorate General of Trade Remedies), GOI has decided to increase the import duty on Malaysian refined palm oil by 5% for six months. Due to Free Trade Agreement, Malaysia has duty advantage over Indonesia. As a matter of fact, Imports of refined palm oil from Malaysia increased by 314% between year 2016-17 to Jan- June 2019.

The government plans to double the farmers income and to achieve self-sufficiency in edible oil by 2030 is welcome step. In first step the target is to increase edible oil production by 2022-23, from primary sources from current 7.1 MT to 11-12 MT. The secondary sources and Tree born oil will further contribute about 3 MT, thus will reduce our dependence on import. India is using only 30-35% of its plant processing capacity. So, the increased oilseed production will help the industry as well.

Yours truly
CS Joshi
Editor

Oil Technologists' Association of India
(North Zone)

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NUTRITIONAL FACTS & SIGNIFICANCE OF OIL BLENDING

Dr. S K Handoo
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Three groups of naturally occuring organic compounds which are of fundamental importance to both animals and plants are oils & Fats, carbohydrates and proteins. Fat is an important component of human diet and fulfills several nutritional functions. It is a concentrated source of energy and helps to increase caloric density of diets. Oils and fats furnish about 9.0 K cal. of energy per gram as compared to 4 K cal. furnished each by carbohydrates and proteins. This high caloric value of oils and fats makes it possible for the body to store it in fat depots and can be drawn in periods of heavy work or fasting.

The choice of healthy cooking oil has been a controversial subject. Over the years evidence has accumulated to show the nutritional significance of various edible oils. Earlier, it was believed that Polyunsaturated fatty acids (PUFA) rich oils prevented Coronary Heart Disease by lowering blood cholesterol and the dietary advice was to use high PUFA oils like Kardi & Sunflower oils Rice bran oil, Cottonseed oil, Soybean , Corn oil etc are also good source of PUFA. Subsequently it was established that prolonged usage of high FUFA oils had undesirable effect of lowering good cholesterol also along with bad cholesterol. These oils undergo rapid oxidation and could lead to production of free radicals in the human system and thereby enhance the risk of certain cancers, cataracts, rheumatoid arthritis and contribute to aging process.

All these findings have led to change with respect to the earlier recommendations. Cholesterol Balancing rather than cholesterol lowering and oxidation stability has now become important concern. The American heart Institute now recommends use of oils or their blends having an equal proportion of saturated, mono-unsaturated and polyunsaturated fatty acids.

Although higher intake of PUFA content is no longer recommended but even the present day recommendations do suggest that 33% of total intake of fat should be derived from PUFA as PUFA are the only source of essential fatty acids commonly known as Omega 6 and Omega 3 fatty acids. In the body linoleic acid and alpha Linolenic acids are converted into long chain polyunsaturated fatty acids (PUFA). The n-6 PUFA (Omega 6) & n-3 PUFA (Omega -3) are precursors for the synthesis of prostaglandins and Thromboxanes which are beneficial in the following ways:

- Contraction of smooth muscles
- Functioning of central nervous system
- Enzyme activity in lipid metabolism
- Body weight maintenance
- Skin texture
- Proper kidney and liver functions
- Blood circulation & cardiovascular functions
- Regulation of pulse rate
- Maintenance of blood pressure
- Reproduction
- Teratment of gastric ulsers
- Treatment of bronchial asthma
- Inhibition of platelet aggression
- Immune system function including allergy responses
- The healing & repair process, including regulation of cell division
- Thermoregulation, or the maintenance of a constant body temperature
- Digestive system functions, including regulation of stomach secretions
- The inflammatory process including fever & pain regulation
- Various other functions, including control of fluid pressure in the eyes, ears and joints

Importance of Omega-3 oils

Why are the omega fatty acids so important to health? There are a number of reasons. Because they form important components of cell membranes. Omega oils are needed to prevent drying and flaking of the skin. They are also needed to ensure proper growth and development in infants and children. But two of the Omega oils most important functions involve regulating the body's use of Cholesterol and the production of substances that regulate nearly all other bodily processes. The body uses Omega oils to create a variety of chemicals called eicosanoids, that regulate a wide variety of bodily processes. The Omega-3 and the Omega -6 families each produce their own eicosanoids. The important role these chemicals play within the body helps to explain why the essential fatty acids are so essential. One of the most important groups of eicosanoids is the prostaglandins and these operate in most tissues of the body to regulate almost every bodily functions. The beneficial effects of prostaglandins are given above.

Prostaglandin imbalances cal lead to loss of body's ability to protect itself . For example, certain prostaglandins in the stomach govern the secretion of a protrective stomach coating that prevents digestive acids from acting on the walls of the stomach.

Vegetable oil facts

The role of dietary fats and oils in human nutrition is one of the most important areas of concern and investigation in the field of nutritional science. The findings of

investigations on this subject have wide-ranging implications for consumers. Health care providers and nutrition educators as well as food producers, processors & distributors. New evidences concerning the benefits and risks associated with particular aspects of dietary fat is constantly emerging in scientific literature. These research findings & changing views about the effects of dietary fats and oils can also profoundly influence the consumption of various foods and ultimately, health and nutritional status, agricultural production, food processing technologies, food marketing practices and nutrition education.

If you frequently cook in the kitchen then you are probably familiar with using oil. Oil is used as an ingredient and is also used for frying. One should know which oils are best used for frying . Here are different types of common cooking oils & proper use of each of them. Nutritional qualities of each oils are also given below.

PEANUT OIL

Peanut oil is obtained from pressing peanut kernels. Peanuts are believed to be originating in Central American region from where they spread to other parts of the world by Spanish explorers. Today , peanuts are widely cultivated as important oil seeds and a prime commercial crop in China, India, African nations and the United States of America. At present India & China are two leading producers of groundnuts in the world.

Peanut oil has good oxidative & thermal stability & is a great oil to use when frying at high temperatures i.e deep frying. This results in lower oil retention in fried foods. Flavor reversion is least in peanut oil, Shelf life of products fried in this oil is excellent.

Peanut oil is low in saturated fats, free from cholesterol, contains essential fatty acids (linoleic acid (Omega 6)) making it as one of the healthiest cooking oils. Being a vegetable oil, it is good source of Plant sterols (phyto sterol) especially beta-sitosterol. The FDA has approved the following claim for phytosterols: “Foods containing at least 0.4 gram per serving of plant sterol, eaten twice a day with meals for a daily total intake of 0.8 gram, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease. Phyto-sterols competitively inhibit cholesterol absorption in the gut and therby can reduce cholestertol levels by 10% to 15%. Phytosterols were first recognized in 1970’s for their ability to absorb dietary cholesterol in the blood, thereby protecting against cardiovascular disease. Phytosterols lower cholesterol in two ways.

- First they block the absorption of dietary cholesterol that is circulating in the blood.
- Second, they reduce reabsorption of cholesterol from the liver, which the body naturally produces.

So whether your cholesterol is high because of dietary habits, genetics or both, eating foods with phytosterols can help lower blood cholesterol level.

Peanut oil is rich in mono-unsaturated fatty acids (MUFA) like Oleic acid (C18;1) that help to lower LDL or bad cholesterol and increases HDL or good cholesterol in the blood.

Peanut oil contains resveratrol, a polyphenol antioxidant, which has been found to have protective function against cancers, heart disease, degenerative nerve disease, Alzheimer’s disease, and viral/fungal infections. Research studies have suggested that resveratrol can cut stroke risk by alteration of molecular mechanisms in blood vessels (reducing susceptibility to vascular damage through decreased activity of angiotensin, a systemic hormone causing blood vessel constriction that would elevate blood pressure) and by increasing production of the vasodilator hormone, nitric oxide.

Peanut oil contains valuable amounts of anti-oxidant Vitamin E which is required for maintaining the integrity of cell memberane of mucus memberanes and skin by protecting it from harmful oxygen-free radicals.

RICE BRAN OIL

Rice bran oil is a relatively new oil that is extracted from rice bran and is gaining popularity in Asian countries like Japan, Korea, China, Thialand and India. Rice bran has good stability & is ideal oil for cooking & all types of frying. The oil does not decompose at high temperatures to form toxic compounds
RBO has balanced fatty acid composition as compared to other vegetable oils & is closer to the recommendations of American Heart Institute & WHO.

RBO contains nutraceuticals like Oryzanol, Tocotrienols, Squalene, Inositol, 4-hydroxy 3 Methoxy Cinnamic acid, Phytosterols etc. Now a days refined rice bran oil is produced through the process of physical refining of the crude oil which ensures that micronutrients especuially oryzanol is not lost during refining.

Rice bran oil is the only oil containing oryzanol which has following beneficial effects:

- Maintains good cholesterol and reduces bad cholesterol & triglycerides.
- Alleviates d circulation
- Accelerates growth
- Retards aging
- Acts as growrh preserver & health rejuvenator

Squalene present in rice bran oil aids skin nutrition, maintains integrity & tone of the skin with anti-wrinkle action. Tocotrienols present in the oil has anti-thromboitic and anti cancer properties. 4-hydroxyl 3-methoxyl cinnamic acid in rice bran oil stimulates hormonal secretion and rejuvenates health.

In Japan because of its nutritional properties , rice bran oil is known as heart oil & in many Western Countries, it

has acquired the status of health food.

COTTONSEED OIL

Cottonseed oil is among the unsaturated oils and has a 2;1 ratio of polyunsaturated to saturated fatty acids. Its fatty acid profile generally consists of 70% unsaturated fatty acids including 18-22% monounsaturated (oleic) and 50-52% poly unsaturated (linoleic) and 26-28% saturated (primarily palmitic and stearic acids)

Cotton seed oil is highly desirable food oil for use in salad, Cooking oil and in commercial frying. The reverted flavor of deodorized CSO is usually described as nutty or nut like which is more acceptable at higher degrees of oxidation than other vegetable oils. Cottonseed oil is often used as the yardstick for measuring flavor and odour qualities in other oils. Unlike some oils, cottonseed oil does not deteriorate or revert rapidly in flavor when used at high temperatures.

Various tocopherol isomers that act as naturally occuring antioxidants are found in CSO. Besides Alpha tocopherol, it has gamma tocopherol which has greater effectiveness as an antioxidant.

CSO is also rich source of phytosterols which have cholesterol reducing property.

OLIVE OIL

1 Olive oil has high oleic acid content and low poly unsaturated fatty acids & is more resistant to oxidation.
2 Olive oil contains poly phenols (Hydroxytyrosol) not found in other vegetable oils which has antioxidant properties
3 Olive oil has anti-inflammatory properties.
4 Olive oil supports cardiovascular & Joint health
5 Virgin Olive oil has shelf life of around 2 years
6 Olive oil is used as salad oil, in cooking & frying

CORN OIL

1 Corn oil is excellent source of essential fatty acids
2 Inspite high unsaturation, Corn oil has good oxidative & thermal stability.
3 Corn oil can be used as cooking oil & all types of frying

SESAME OIL

1 Sesame oil contains almost equal proportion of oleic and linoleic acid
2 Sesame oil is one of the most stable oil due to presence of sesamine and sesamoline
3 Due to its peculiar flavor, it has regional preference and is used as salad oil and in cooking/frying

SOYABEAN OIL

The essential fatty acid ratio of SBO is quite ideal due to higher content of linolenic acid (Omega 3), but PUFA content is much higher than recommended levels.

Advantages of Omega – 3 : There is a good evidence that SBO has unique essentiality in human nutrition due to Omega – 3 fatty acid. SBO is good source of gamma Linolenic acid which is also nutritionally desirable.

Due to high PUFA content, the use of SBO needs to be coupled with use of some other vegetable oil having higher content of saturates / Monounsaturates to arrive at desired ratio of SFA/MUFA/PUFA .
The major disadvantage with SBO is flavor reversion and development of beany odour on storage.

1 Soyabean oil is nutritional oil due to presence of Omega-3 fatty acids (Alpha-linolenic acid)
2 Due to poor oxidative stability, SBO is not ideal for deep frying
3 SBO should only be used in cooking
4 Due to problem of flavor reversion & development of beany flavor, only fresh soyabean oil should be used.

SUNFLOWER OIL

SFO contains highest level of Alpha Tocopherol which is the most active form of Vitamin E. SFO has low level of Linolenic acid and is more stable as compared to SBO.

Sunflower oil has also very high content of PUFA than the recommended levels. Due to its composition and quality, SFO is good for human consumption. However due to high ratio of Omega 6/Omega 3, sole and prolonged usage of SFO is no longer recommended because of adverse impact on good cholesterol.

MUSTARD OIL

Mustard oil has the most ideal SFA/MUFA/PUFA ratio as well as essential fatty acid ratio. But most of the varieties of mustard oil found in India have very high content of Erucic acid ranging from 35 to 48 %

High content of erucic acid present in mustard oil has been held responsible for hampering the condition of electric impulses in the Heart.
Mustard oil contains gamma linolenic acid which is precursor of Eicosatrienoic & Arachidonic acid which are essential fatty acids

Mustard oil has excellent oxidation stability due to presence of sulfur compounds mostly allyl-isothiocynate.

Due to high Erucic acid, its usage should be coupled with other vegetable oils.
1 Mustard oil is the most stable oil and has good oxidative stability
2 It is ideal for cooking & all types of frying.
3 MO has omega -3 fatty acids in excess of Soyabean oil.
4 The only drawback is the presence of Erucic acid in high amounts. Erucic acid has been held

responsible for hampering the condition of electric impulses in the heart.

The World Health Organisation (WHO) suggests that the ratio of Omega 6 and Omega 3 in the diet should be 5-10. There are three parameters to adjudge any cooking oil as the healthiest oil. These are ratio of Saturated : Monounsaturated : Polyunsaturates , ratio of essential fatty acids (Omega 6 / Omega 3) , presence of natural antioxidants and thermal stability of oil..
Oils with high content of PUFA get thermally deteriorated during frying which is generally done at high temperature of 170-180 C.

Blending of oils is an answer to all these issues. Blending of 2 or more than 2 oils improves thermal stability and provides right balance of SFA : MUFA : PUFA.

The following table shows the composition of common vegetable oils vis -a- vis the above recommendations

Name of Oil	Fatty acids (% by Weight)			Essential Fatty acid Ratio Omega 6 / Omega 3
	SFA	MUFA	PUFA	
Safflower (Kardi)	10	15	75	69
Coconut oil	84.3	12.9	2.8	100
Sesame oil	22.7	37.4	39.9	100
Corn oil	16	37	47	46
Palm oil	50	40	10	20
Sunflower oil	12	21	67	69
Cottonseed oil	29	20	51	100
Soybean oil	16	24	60	10
Mustard oil	6	67	27	2
Rice Bran oil	20	43	37	15
Groundnut oil	20	50	30	32
RECOMMENDED	**Below 33%**	**Above 33%**	**About 33%**	**5-10**

BLENDED VEGETABLE OILS

Only Rice bran oil is somewhat close to the recommendations of WHO & American Heart Institute. Blending of more than two oils can meet the above recommendations and put forward an excellent scope for providing a balanced nutritional source. The following table shows the ratio of SFA/MUFAPUFA & Omega6/Omega3 ratios of a few possible multiple oil blends.

OIL BLEND	Fatty acids (% by Weight)			Essential Fatty acid Ratio Omega 6 / Omega 3
	SFA	MUFA	PUFA	
SBO+GNO+MO (30:20:50)	12	50	38	10.5
RBO+SFO+PO (40:10:50)	**34**	**39**	**27**	**12**
MO+CSO+PO (50:10:40)	26	51	23	11
MO+RBO+SFO (50:40:10)	13	54	35	13
SBO+GNO+RBO (30:10:60)	19	38	43	15
SBO:PO:RBO (40:20:40)	**23**	**35**	**41**	**10**
SBO:PO:RBO (70:15:15)	**22**	**29**	**49**	**9**
SBO:PO:RBO (60:20:20)	**24**	**31**	**45**	**9**
SBO+GNO+PO (30:30:40)	31	38	31	13
SBO+GNO+PO (50:20:30)	27	34	39	11
RECOMMENDED	Below 33%	Above 33%	About 33%	**5-10**

Trade News

FSSAI approves 13 food testing laboratories

FSSAI will provide an annual grant to each NRL

The Food Safety and Standards Authority of India (FSSAI) has given approval to 13 food testing laboratories as National Reference Laboratory (NRL) under Regulation 3 of Food Safety and Standards Regulation, 2018 for specific areas.

FSSAI will provide an annual grant to each NRL that shall be used for method development, research activities, training, etc.

FSSAI has pointed out that each NRL should develop standards for routine testing procedures and reliable testing methods, provide technical support in the area of competence and be a resource centre for provision of information for certified reference materials.

The approved NRLs include 5 private players- Trilogy Analytical Lab, Edward Food Research & Analysis Centre, Vimta Labs, Fare Labs, Neogen Food & Animal Security. The other labs are Central Food Technological Research Institute, Export Inspection Agency, Punjab Biotech Incubator, ICAR- National Research Centre for Grapes, Central Institute of Fisheries Technology, Centre for Analysis and Learning in Livestock and Food-NDDB, CSIR- Indian Institute of Toxicology Research, and National Institute of Plant Health Management.

Courtesy: NuFFoods Spectrum

NIFTEM Bill 2019 receives the final nod

The Union Cabinet chaired by Prime Minister Narendra Modi has approved the introduction of National Institutes of Food Technology, Entrepreneurship and Management Bill, 2019.

The objective of the bill is to confer the status of Institutions of National Importance to National Institute of Food Technology, Entrepreneurship and Management (NIFTEM) at Kundli, Haryana, and the Indian Institute of Food Processing Technology (IIFPT) at Thanjavur, Tamil Nadu.

The legislation would provide for functional autonomy to the institutes to design and develop courses, undertake research activities and leverage enhanced status in their academic pursuits, so that they become world class institutes.

The institutes would implement the reservation policy of the Government and would also undertake special outreach activities for the benefits of concerned stakeholders. It would enable the institutes to provide world class teaching and research experience by adopting innovative practices.

Courtesy: Nuffoods Spectrum

POET launches corn-oil-based asphalt alternative

In South Dakota, POET has entered the asphalt market with its newest green alternative to fossil-fuel products. POET's "JIVE" is a proprietary corn-oil-based product now being used by construction companies across the US to modify or rejuvenate asphalt in roads.

"This is the latest example of POET developing new technology to move our world toward true sustainability," POET CEO Jeff Broin said. "We must learn to utilize materials harvested from the surface of the earth rather than pulling more crude oil from below. Every mile paved using JIVE and recycled materials helps save the planet and helps save taxpayer dollars."

JIVE is being used today to make roads more resilient in both high- and low-temperature conditions. It helps roads resist cracking in cold weather and rutting during the warm season. It is also used to soften old asphalt so that it can be recycled into new roads.

"This is a lower-cost, better-performing product than the petroleum modifiers used in the past," said Matt Reiners, Vice President of Business Development for POET Nutrition. "Companies have used JIVE over the past year to pave high-traffic highways in places like New Jersey and roads exposed to fierce elements in Utah, parts of Canada and elsewhere."

With 164,000 miles of highway across the US and annual state and local government expenditures of $175 billion on highway construction and maintenance, the high quality, affordable and environmental alternative that JIVE provides meets a significant need. At full JIVE production, POET could improve enough roadways to circle the globe each year.

Courtesy: Bio Fuels Digest

Indonesia to challenge 'discriminative' EU directive on palm oil

Indonesia intends to challenge an EU directive on renewable energy at the World Trade Organization, arguing the plan to curb the use of crops that cause deforestation will unfairly target palm oil, a senior Indonesian official told Reuters.

The world's top producer of the oil is also reviewing its relations with the European Union over the issue and urging other Southeast Asian nations to defer plans to upgrade EU ties, said Mahendra Siregar, special staff at

the foreign ministry.

The EU directive, known as RED II, aims to stop the use of crops that cause deforestation in transportation fuel by 2030. Environmentalists blame a rapid expansion of Indonesian palm plantations for a massive clearance of forests that were home to endangered tigers, orang-utans and elephants.

A challenge from Indonesia on the policy would escalate its efforts to safeguard sales to its second-biggest palm oil market. The EU accounted for around 15 percent of Indonesia's total palm exports of more than $15 billion last year.

Siregar said palm oil will be labelled a "high risk" crop — indicating its potential to result in deforestation — in an act attached to RED II due to be issued in early February. Indonesia will challenge both RED II and the act at the WTO's dispute settlement body after it is issued, he said.

The WTO body can order members to remove any trade barriers if it finds that the policies breach free trade rules.

A government document outlining Indonesia's stance on the EU policy and reviewed by Reuters said the method used to assess "Indirect Land Use Change" (ILUC), which aims to measure the risk of unintended carbon emissions, was not internationally recognized and not applicable in a tropical region.

"The criteria listed in ILUC gives advantages to local European Union commodities such as rapeseed oil," it said.

Indonesia letter to ASEAN

Indonesia's Foreign Minister Retno Marsudi said in a letter to the Association of Southeast Asian Nations (ASEAN) that developments in the EU hurting the interests of ASEAN palm oil-producing states have caused it to defer "elevation of ASEAN-EU dialogue relations to a strategic level."

The Jan. 14 letter, also reviewed by Reuters, urged other members of ASEAN to follow suit.

"All Indonesia-EU relationships will be overviewed related to that discriminative policy by the EU," Siregar said.

Asked about the letter, a spokesman at the ASEAN Secretariat in Jakarta said: "It is up to the member states to decide."

Rafael de Bustamante Tello, first counsellor at the EU embassy in Jakarta, said: "The EU considers the RED II to be in line with the EU's international commitments, including its WTO obligations."

The European Commission will make sure "achievement of the EU's renewable energy goals goes hand in hand with the fair and rules-based international trade regime that we so strongly defend," he said.

De Bustamante also said that during an EU-ASEAN ministerial meeting in Brussels last week the two blocs decided to form a new joint working group to address issues related to palm oil.

In January last year, the WTO ruled in favor of Indonesia on several challenges to anti-dumping duties that the EU had imposed on its biodiesel exports. The duties had effectively stopped the trade, but exporters were able to resume shipments to Europe around April.

Palm oil, mainly produced in Indonesia and Malaysia, is used as feedstock for biofuels as well as being used in a wide variety of goods, ranging from food to soap.

Courtesy: Arab News

Canola plans questioned

Glen Pownall literally laughed out loud when he heard of plans by a canola industry group and the federal government to add millions of tonnes of new demand through market development efforts.

"I just shake my head at this whole thing and how it's being dealt with," he said.

"Their philosophy is crazy."

Pownall, who is managing director of Peter Cremer Canada Ltd., was responding to recent comments by the Canola Council of Canada and International Trade Minister Jim Carr about their plans to expand demand for the crop.

In a conference call organized by the council, Carr said his department is attempting to drum up new canola business in established markets to help replace the loss of the Chinese market.

The minister said he has spoken to his counterparts all over the world but mainly in countries where Canada already exports canola such as Mexico, Pakistan, Bangladesh and the United Arab Emirates.

Carr also mentioned that he will be leading trade missions to Japan and South Korea and has meetings in Chile and the European Union where he plans to raise the subject of canola exports.

Brian Innes, vice-president of public affairs with the council, recently said Canada could pick up "millions" of tonnes of additional demand in markets like Pakistan, Bangladesh, the European Union and the UAE.

Pownall said that is wishful thinking.

He wants Carr to know it will take years to build new demand in markets outside China.

He believes there is maybe a few hundred thousand tonnes of additional demand that could emerge from swing crush plants around the world but only if the price is right.

That won't do much to offset the loss of a market that took

4.8 million tonnes of Canadian canola in 2018.

In some established markets there is simply no room for growth whatsoever.

Japan is a good case in point.

“They basically have imported the same amount of canola every year for the last 25 years that I’ve been trading canola,” he said.

New demand will not suddenly materialize in that market. The country has an aging population, aging crush plants and a well-established just-in-time inventory approach to buying.

“It’s not just going to happen because some Canadian government official went to Japan and said, ‘can you please crush more canola?’ ” said Pownall.

The same goes for Mexico. He said they won’t buy more unless Carr shows up with money in hand to convince crushers to process more Canadian canola.

Pownall said the last time South Korea purchased a cargo of canola was in 2012-13, and Chile has never been a player.

“When they say Chile, I don’t know what the hell they’re talking about. We grow sowing seed in Chile but I don’t know if there’s any crush capacity there whatsoever.”

Pakistan can be a big importer of Canadian canola but it will be difficult to convince them to switch crush capacity out of soybeans because they need the meal.

The UAE is one of the few markets mentioned where there could be potential. There is only one crush plant in the county but it is one of the largest in the world.

Al Ghurair Resources has the capacity to crush 6,000 tonnes of soybeans and 4,200 tonnes of canola a day.

Pownall said that facility could maybe crush an additional 400,000 tonnes of canola a year, but the company’s decision would likely depend on price.

There is potential for the EU to take more as well but shipments of canola destined for the biodiesel sector need to meet sustainability requirements.

He knows of two line companies in Canada with sustainability certification programs. All of the others are considering it in the wake of the China situation.

Courtesy: Producer.com

Edible oil makers cut prices by up to Rs 2/litre

Reduction in prices reflects ongoing trend in international market

Leading branded edible oil producers have cut their product prices by up to Rs 2 a litre (around 4 per cent on average) — the second price cut in the last two months, during month of April amd may 2019, to pass on the decline in the crude palm oil (CPO) to consumers.

Adani Wilmar, the producer of the Fortune brand edible oils, slashed prices by Rs 2 a litre. Other players in the industry, including Cargill India, reduced it by Rs 1 a litre recently. Many companies such as Mother Dairy, which produces the Dhara brand of edible oils, however, have cut distributors’ margins instead of redcuing the maximum retail price (MRP), with room for distributors to offer discounts to retailers and, eventually, to consumers.

The price cut in branded edible oils reflects a similar trend in the international market. Over the past one year, prices of various edible oils, including crude palm oil and refined soya oils, have gone down in the range of 11-20 per cent globally, due to excess supply in the world market.

With the European Union’s decision to suspend CPO as a biofuel, supply from major producers such as Indonesia and Malaysia is now coming to countries like India and China, that have a deficit. A 6-percent depreciation in the rupee over the last one year has restricted the benefit of global price decline to Indian consumers.

“At Adani Wilmar, we are very conscious on passing the benefits to customers whenever the market rates go down. In this case too, we have reduced our edible oil rates by Rs 2 per litre in the last one month. We have to monitor both the rupee-to-dollar and free-on-board (FOB or landed) prices of crude edible oils regularly,” said Anghu Mallick, deputy Chief Executive Officer of Adani Wilmar.

Cargill India had recently cut its product prices by Rs 1 to pass on the decline in CPO prices to consumers.

The benchmark crude palm price for near-month delivery in Bursa Malaysia reported a decline of 6 per cent to trade at MYR 2,029 in the last one month. The decline, however, was a steep 20 per cent in the last one year on account of overproduction in major producing nations.

“We are monitoring movement in the prices of edible oilseeds and oils in the domestic market, before taking decisions regarding price cuts. We will continue to pass on the global price benefit to consumers,” said a senior official of a leading branded edible oil firms.

The market trend in recent weeks, however, shows that prices have started reversing.

Meanwhile, Vedika Narvekar, an analyst with Anand Rathi Shares and Brokers, believes that mustard seed prices may move north on account of low arrivals. “Easing of seasonal supply pressure has gradually restricted the fall in mustard seed prices,” she added.

The situation, however, has turned positive for branded edible oil producers in India, with prices of major oilseeds recovering due to supply shortage.

While soybean remained little changed at Rs 3,877 a quintal, mustard seed prices have jumped 4 per cent to trade at Rs 4,025 a quintal in the last one month.

Similarly, prices of refined soya oil on the benchmark National Commodity & Derivatives Exchange (NCDEX) shot up by 3 per cent to Rs 762 per 10 kg in the last one month.

In fact, the average landed cost of CPO imports has moved marginally up by $10 to $530 a tonne for April, from $520 a tonne for March.

Similarly, the import cost of refined, bleached and de-odorised (RBD) palmolein also moved marginally up to $569 a tonne for April, from $559 for March. However, the spurt in crude and refined palm oil was almost fully compensated by the $19 decline in refined soybean oil to $692 a tonne from $711 tonne in the last one month.

India imports around 3 million tonnes of soybean oil primarily from Argentina, in addition to 9 million tonnes of palm oil mainly from Indonesia and Malaysia combined. B V Mehta, Executive Director of the Solvent Extractors' Association, said that India has imported about 7.5 million tonnes of vegetable oil (edible and non-edible combined) during the period between November 2018 and April 2019.

Courtesy: Business Standard

RI eyes Japanese technology that converts palm oil waste into valuable products

Coordinating Economic Minister Darmin Nasution has welcomed the adoption of Japanese technology that can convert liquid palm oil waste, known as palm oil mill effluent (POME), into valuable products such docosahexaenoic acid (DHA), an omega-3 fatty acid, and animal feed.

The Novel Algae-DHA Technology was developed by Japan's Mobiol Corporation and Tsukuba University.

Darmin said the adoption of the technology was important for Indonesia, as the world's largest palm oil producer, because it could attract investment, boost exports, address environmental issues and improve economic activity.

The Novel Algae Technology can boost financial returns and address environmental issues, so it is better than the current technology used to manage palm oil," Darmin said at a seminar over the weekend as quoted by kontan.co.id.

In Indonesia, there are currently 875 firms that produce palm oil products, which produce some 156 million tons of POME per day.

Mobiol Corporation Group CEO Toshihide Nakajima explained that the global demand for DHA was around 250,000 metric tons (MT) annually, while the demand for aquatic and animal feed was estimated at 4 million MT and 1 million MT per year respectively.

Mobiol Corporation projects that sales of DHA could be four times higher than the revenue from the currently produced palm oil products, while sales from aquatic and animal feed could be two times higher. (bbn)

Courtesy: The Jakarta Post

Important Figures

Edible Oil Updates December - 2019

OIL SECTION

Table 1. : India: Total Oils PSD

OILS ('000 metric tons)	MY 2017/18	MY 2018/19	MY 2019/20
	Revised	Estimate	Forecast
Crush	28175	28580	30280
Beginning Stocks	2080	2122	2,056
Production	7408	7437	7922
MY Imports	14594	15500	16400
Total Supply	24082	25059	26378
MY Exports	35	13	32
Industrial Dom. Cons.	975	945	970
Food Use Dom. Cons.	20950	22045	23380
Feed Waste Dom. Cons.	0	0	0
Total Dom. Cons.	21925	22990	24350
Ending Stocks	2122	2056	1996
Total Distribution	24082	25059	26378

Table 2. : India: Edible Oil Imports, In Thousand Metric Tons

	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Oct 18 Feb19	Oct 17 Feb 18	% Change
RBD palmolein	137	109	130	167	241	785	755	4
Crude palm oil	610	568	67	645	498	2,388	2,984	20
Crude Palm ker-oil	7	15	11	2	13	48	43	10
Total palm oil	754	692	208	815	752	3,221	3,782	15
Crude soy oil	264	204	85	186	220	960	932	3
Total soy oil	264	204	85	186	220	960	932	3
Crude sun oil	157	166	236	200	200	959	943	2
Total sun oil	157	166	236	200	200	959	943	2
Rapeseed/Canola oil	0	12	13	9	10	44	133	67
Grand Total	1,174	1,073	543	1,211	1,182	5,183	5,790	10

Source: Solvent Extractors' Association of India

Table 3. : Change in Duties of Imported Oils

Products	1st March 2018	Social Welfare Cess	Effective Duty	14th June 2018	Social Welfare Cess	Effective Duty	1st Jan. 2019	Social Welfare Cess	Effective Duty
Malaysia									
Crude Palm Oil	44.00%	10%	48.40%	44.00%	10%	48.40%	40.00%	10%	44.00%
RBD Palmolein	54.00%	10%	59.40%	54.00%	10%	59.40%	40.00%	10%	49.50%
Indonesia									
Crude Palm Oil	44.00%	10%	48.40%	44.00%	10%	48.40%	40.00%	10%	44.00%
RBD Palmolein	54.00%	10%	59.40%	54.00%	10%	59.40%	50.00%	10%	55.00%
RBD Palm Oil	54.00%	10%	59.40%	54.00%	10%	59.40%	54.00%	10%	59.40%
Crude Soyabean Oil	30.00%	10%	33.00%	35.00%	10%	38.50%	35.00%	10%	38.50%
Crude Sunflower Oil	25.00%	10%	27.50%	35.00%	10%	38.50%	35.00%	10%	38.50%
Crude Rapeseed Oil	25.00%	10%	27.50%	35.00%	10%	38.50%	35.00%	10%	38.50%
Refind Soyabean Oil	35.00%	10%	38.50%	45.00%	10%	49.50%	45.00%	10%	49.50%
Refind Sunflower Oil	35.00%	10%	38.50%	45.00%	10%	49.50%	45.00%	10%	49.50%
Refind Rapeseed Oil	35.00%	10%	38.50%	45.00%	10%	49.50%	45.00%	10%	49.50%
Crude Cottonseed Oil	30.00%	10%	33.00%	35.00%	10%	38.50%	35.00%	10%	38.50%
Refined Cottonseed Oil	35.00%	10%	38.50%	45.00%	10%	49.50%	45.00%	10%	49.50%

Table 4. : India: Vegetable Oil Reference Price as on February 15, 2019

Vegetable Oils		$/Metric Ton
Crude Palm Oil	(1511 10 00)	575
RBD Palm Oil	(1511 90 10)	607
Other-Palm Oil	(1511 90 90)	591
Crude Palmolein	(1511 10 00)	608
RBD Palmolein	(1511 90 20)	611
Other-Palmolein	(1511 90 90)	610
Crude Soybean Oil	(1507 10 00)	758

Source: Ministry of Finance, GOI vide Notification No. 10/2019 dated February 15, 2019. The tariff values are revised every two weeks to reflect changes in international prices. The import duty applies to the current tariff value rather than to the actual invoice value.

Production, Supply and Demand Data Statistics

Table 5. : India: Commodity, Oil, Soybean, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Soybean	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-19	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	7700	8300	9000	9600	0	10000
Extr. Rate, 999.9999	0.18	0.1795	0.18	0.1794	0	0.179
Beginning Stocks	427	427	170	313	0	230
Production	1386	1490	1620	1722	0	1790
MY Imports	2984	3003	3400	3400	0	3600
Total Supply	4797	4920	5190	5435	0	5620
MY Exports	7	7	5	5	0	20
Industrial Dom. Cons.	0	0	0	0	0	0
Food Use Dom. Cons.	4620	4600	4950	5200	0	5400
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	4620	4600	4950	5200	0	5400
Ending Stocks	170	313	235	230	0	200
Total Distribution	4797	4920	5190	5435	0	5620

Table 6. India: Commodity, Oil, Rapeseed, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Rapeseed	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-2019	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	5500	5600	5600	6200	0	6500
Extr. Rate, 999.9999	0.38	0.41	0.38	0.4	0	0.41
Beginning Stocks	367	367	252	254	0	331
Production	2090	2296	2128	2480	0	2665
MY Imports	278	278	250	300	0	200
Total Supply	2735	2941	2630	3034	0	3196
MY Exports	3	2	4	3	0	2
Industrial Dom.Cons.	80	85	80	0	0	0
Food Use Dom.Cons.	2400	2600	2350	2700	0	2800
Feed Waste Dom.Cons.	0	0	0	0	0	0
Total Dom. Cons.	2480	2685	2430	2700	0	2800
Ending Stocks	252	254	196	331	0	394
Total Distribution	2735	2941	2630	3034	0	3196

Table 7. India: Commodity, Oil, Peanut, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Peanut	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-19	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	3900	4000	3000	3000	0	3400
Extr. Rate, 999.9999	0.33	0.34	0.33	0.34	0	0.34
Beginning Stocks	237	237	195	318	0	328
Production	1287	1360	990	1020	0	1156
MY Imports	0	0	0	0	0	0
Total Supply	1524	1597	1185	1338	0	1484
MY Exports	19	19	15	5	0	10
Industrial Dom. Cons.	10	10	10	5	0	10
Food Use Dom. Cons.	1300	1250	950	1000	0	1200
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	1310	1260	960	1005	0	1210
Ending Stocks	195	318	210	328	0	264
Total Distribution	1524	1597	1185	1338	0	1484

Table 8. India: Commodity, Oil, Cottonseed, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Cottonseed	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-19	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	9200	9000	9000	8500	0	9100
Extr. Rate, 999.9999	0.144	0.1433	0.1444	0.1429	0	0.1429
Beginning Stocks	38	38	21	88	0	33
Production	1325	1290	1300	1215	0	1300
MY Imports	3	0	3	0	0	0
Total Supply	1366	1328	1324	1303	0	1333
MY Exports	0	0	0	0	0	0
Industrial Dom. Cons.	45	40	45	45	0	50
Food Use Dom. Cons.	1300	1200	1255	1225	0	1250
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	1345	1240	1300	1270	0	1300
Ending Stocks	21	88	24	33	0	33
Total Distribution	1366	1328	1324	1303	0	1333

Table 9. India: Commodity, Oil, Sunflower seed, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Sunflowerseed	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-19	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	200	267	260	220	0	215
Extr. Rate, 999.9999	0.375	0.3633	0.3769	0.3636	0	0.3628
Beginning Stocks	516	516	213	609	0	489
Production	75	97	98	80	0	78
MY Imports	2476	2496	2200	2400	0	2600
Total Supply	3067	3109	2511	3089	0	3167
MY Exports	4	0	4	0	0	0
Industrial Dom. Cons.	0	0	0	0	0	0
Food Use Dom. Cons.	2850	2500	2300	2600	0	2800
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	2850	2500	2300	2600	0	2800
Ending Stocks	213	609	207	489	0	367
Total Distribution	3067	3109	2511	3089	0	3167

Table 10. India: Commodity, Oil, Coconut, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Coconut	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-19	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Crush	759	1008	745	1060	0	1065
Extr. Rate, 999.9999	0.6271	0.63	0.6268	0.6321	0	0.6319
Beginning Stocks	5	5	5	110	0	115
Production	476	635	467	670	0	673
MY Imports	1	117	0	0	0	0
Total Supply	482	757	472	780	0	788
MY Exports	7	7	10	0	0	0
Industrial Dom. Cons.	195	240	195	245	0	250
Food Use Dom. Cons.	275	400	260	420	0	430
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	470	640	455	665	0	680
Ending Stocks	5	110	7	115	0	108
Total Distribution	482	757	472	780	0	788

Table 11. India: Commodity, Oil, Palm, PSD
(Unit in 1000 metric tons and Extraction rate in Percent)

Oil, Palm	2017/2018		2018/2019		2019/2020	
Market Begin Year	Oct 2017		Oct 2018		Oct-2019	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Planted	0	310	0	315	0	320
Area Harvested	80	0	80	0	0	0
Beginning Stocks	490	490	218	430	0	530
Production	200	240	200	250	0	260
MY Imports	8608	8700	10500	9400	0	10000
Total Supply	9298	9430	10918	10080	0	10790
MY Exports	0	0	0	0	0	0
Industrial Dom. Cons.	580	600	600	650	0	660
Food Use Dom. Cons.	8500	8400	10000	8900	0	9500
Feed Waste Dom. Cons.	0	0	0	0	0	0
Total Dom. Cons.	9080	9000	10600	9550	0	10160
Ending Stocks	218	430	318	530	0	630
Total Distribution	9298	9430	10918	10080	0	10790
Yield	2.5	0	2.5	0	0	0

Health News

EAT-Lancet Commission's report in India- Food Planet Health:

The EAT-Lancet Commission's report, for the first time ever, proposes scientific targets for what constitutes a healthy diet derived from a sustainable food system.

ONE of the most influential public health documents of this decade, the EAT-Lancet Commission's 'Food Planet Health', was formally released for India recently at the headquarters of the Food Safety and Standards Authority of India (FSSAI).

Policy-makers, development agencies, embassy representatives, farmers' associations, food tech entrepreneurs, researchers and students were present at this event, which was webcast live to 43 colleges across the country. Additionally, three groups of students from reputed institutes of nutrition; food technology and food waste management presented their analyses of the report to provide the perspective of the generation of future leaders.

Authored by 37 international experts, including two from India, brought together by EAT, the science based global platform for food system transformation, and Lancet, one of the world's most prestigious peer-reviewed general medical journals published weekly since 1823; the EAT-Lancet Commission's report, for the first time ever, proposes scientific targets for what constitutes a healthy diet derived from a sustainable food system.

The Global Alliance for Improved Nutrition (GAIN), a global initiative launched by the United Nations in 2012 to make nutritious food more affordable, and Tasting India, an international platform for food policy advocacy, partnered with the FSSAI to present the event and share the key takeaways with their respective social media audiences.

"The programme has been planned in a way to create a nationwide conversation around the document," Mr. Pawan Agarwal, CEO, FSSAI said. "A video report will also be prepared for distribution among key stakeholders, via FSSAI's Network of Professionals of Health and Nutrition (NetProFan), so that they in turn hold workshops to prepare action plans based on the recommendations of the report." He added, the strategy was an expression of the FSSAI's belief that "consumer empowerment is the key element" of its strategy to create a market- demand for safe food and healthy diets.

In his welcome address, he said "With 1.35 billion people, that is 1 out of 6 people globally here in India, India would soon surpass China to become the most populated nation in the world and that too on one-third of the landmass of China. Feeding all our people, a healthy diet in a sustainable manner without compromising our ecology and environment is going to be the most important challenge for us in the coming decades. Therefore, the framework provided in this report is very, very important to us in India."

Presenting the report, Dr Brent Loken, Director, Science Translation, EAT, remarked, "If we don't fix the food system, we cannot achieve the UN's Sustainable Development Goals. The great thing that FSSAI is doing is beginning this conversation in India." Dr Loken was followed by Dr K. Srinath Reddy, one of the two Indian Commissioners on the EAT-Lancet Commission, and President, Public Health Foundation of India. In a video-recorded message, Dr Reddy said, "We need to find a safe space to provide nutrition security to everyone by 2050."

Dr. Lawrence Haddad, World Food Prize Winner and Executive Director, GAIN, in his keynote address presented some key steps required for the 'Great Food Transformation' such as taxes on unhealthy foods, subsidies for healthier food options, soft policies, leaderships in the public and private sectors and strong civil society movements. Highlighting the importance of food safety, he also cautioned "As food systems become more formal and organized, food safety threats increase, not decrease. FSSAI has brought the world's of food safety and healthy eating together. You can have safe food that is not nutritious but you cannot have nutritious food that is not safe." Furthermore, he urged the need for more data on malnutrition, dietary patterns etc. because "If you cannot measure it, you cannot monitor it and thus cannot change it." Finally, he remarked, "If we can make this happen in India, we can make this happen anywhere in the world. This country is important because the world looks to India for leadership."

The other highlight of the day was the Executive Director, FSSAI, Madhavi Das's presentation on the Government Action on Five Strategies for the Great Food Transformation. Spelling out the strategies, Das said "The key word is commitment. We need commitment from the Government, industry and all key stakeholders, including citizens to being about a change towards healthy and sustainable diets."

Dr Nafees Meah, South Asia Representative, International Rice Research Institute spoke about the importance and methods of promoting healthy and

sustainable diets through rice-based systems in South Asia because it has the highest consumption of rice per capita.

Ambassador Banashree Bose Harrison, Honorary Executive Director, Tasting India, pointed out, “India is one of the leading food producers of the world in several sectors, so this report is critical for India in particular. India can be beacon for the rest of the world because traditionally we have incorporated plant-based food in delicious way.” She urged young chefs to create healthy recipes which are both affordable, diverse and healthy since “both the palette and the purse matter.”

Ms Chandrika Bahadur, President, Sustainable Development Solutions Network, who concluded the deliberations of the day saying “This food transformation cannot be brought about by the Government alone but through partnerships of all stakeholders towards healthy and environmentally sustainable diets. This movement has to be a consume-led movement to create demand for such food. It is important to contextualize this report for India because it has the power to become a showcase for the entire world.”

Courtesy: Nufoodspectrum.com

Antioxidants In Green Tea Might Protect You From Toxins In Drinking Water, Finds Study

It's not fun to think about, but even in the U.S., access to safe drinking water is not guaranteed. Case in point: the public health disaster that was Flint, Michigan. And though our drinking water has been regulated under the EPA's Safe Drinking Water Act since 1974, many experts don't believe it goes far enough—in fact, only about 90 contaminants are regulated under the act while studies have revealed hundreds of contaminants in the water supply.

But, while there's no question we need better regulation of these pollutants, there are still things we can do as individuals to stay healthy—even beyond buying a great water filter. Turns out, what we eat and drink may play a surprising role in buffering the negative effects of certain chemicals present in tap water.

A new study presented at the 2019 Experimental Biology meeting finds that two antioxidants—vitamin C and epigallocatechin gallate (EGCG)—may reduce the damage done by hexavalent chromium, a contaminant that often enters the water supply via industrial waste. Fun fact: Hexavalent chromium was the cancer-causing chemical featured in the movie Erin Brockovich, and research shows that it still contaminates water supplies for more than 200 million Americans in all 50 states.

For the study, researchers exposed human cells to a solution containing different concentrations of hexavalent chromium. They noted toxic effects on the cells at concentrations of 200 parts per billion (ppb) or higher. But—and this is the really cool part—those toxic effects could be completely blocked by adding vitamin C at 10 parts per million (ppm) or EGCG at 15 ppm. Vitamin C was also able to prevent DNA mutations in bacteria exposed to the chemical.

Vitamin C is found in a variety of fruits and veggies, including citrus, berries, and bell peppers, while EGCG is the main antioxidant present in green tea. It's not clear yet exactly how much protection you'd get by upping your intake of these antioxidants in your diet. But, as these compounds are associated with so many other benefits—from increased immunity to a reduced risk of cancer—consuming more of them is only going to help you out.

Researchers say that adding these antioxidants directly to the water supply could counteract hexavalent chromium's toxic effects. Until then? We'll be loading up on matcha with lemon and filtering our water (with one of these great filters) like our lives depend on it.

Courtesy: Mindbodygreen

Omega-6 fatty acids may help prevent heart disease

The higher the linoleic acid level in the body, the lower the risk of cardiovascular diseases, according to new study analysing nearly 70,000 people in 13 different countries. Linoleic acid is the most common polyunsaturated omega-6 fatty acid. The findings were published in Circulation.

It has been speculated that a high intake of omega-6 polyunsaturated fatty acids may increase the risk of several chronic diseases by, e.g., promoting low-grade inflammation. However, studies conducted on humans have not established a link between even a high intake of omega-6 fatty acids and inflammation. Furthermore, omega-6 fatty acids have beneficial effects on, for example, lipid and glucose metabolism. The most common omega-6 fatty acid in particular, i.e. the essential linoleic acid, has been consistently associated with a lower risk of cardiovascular diseases.

The researchers analysed data from 30 population-based studies involving 68,659 adults from 13 different countries. The Finnish studies included in the analysis were the University of Eastern Finland’s Kuopio Ischaemic Heart Disease Risk Factor Study, KIHD, and the Metabolic Syndrome in Men Study, METSIM. No previously published findings were used in this meta

analysis; instead, new analyses were carried out in each set of data by using pre-defined criteria. This promotes comparability between the findings and reduces the effect of various confounding factors.

At the onset of the study, the study participants were between 49 and 77 years of age, and 15,198 of them developed a cardiovascular disease during the follow-up period. The study found an association between a high linoleic acid level and a reduced risk of cardiovascular diseases and ischemic stroke.

A great strength of the study is that it determined omega-6 fatty acids from blood or tissue biomarkers, eliminating people's memory errors relating to their diet, among other things.

The intake of linoleic acid from food greatly impacts the body's linoleic acid level. The most important dietary sources of linoleic acid are vegetable oils, plant-based spreads, nuts and seeds.

Courtesy: TECH EXPLORIST

How the Detergent Market is Working Towards a Clean Sweep:

The increasingly strident public outcry over the huge volumes of plastic waste clogging our environment demands a response from the companies held responsible for putting it there. Can these companies reduce the amount of plastic in supply chains and meet or even exceed their profitability targets?

The answer is a qualified yes. There are win-wins that achieve both the above goals. Identifying and capturing them is not easy given the number of environmental, commercial and operational stars that have to align to make this possible – but companies need to start looking for these opportunities

A prime example of the potential benefits can be found in the laundry detergent market. The industry's shift to concentrated liquid detergent yields both environmental and commercial gains. The product's journey from unknown innovation to household staple has been long and erratic, but it offers some important lessons for companies that want to meet consumer demand for less plastics in supply chains while remaining competitive.

Towards a packaging solution

Mountains of plastic waste have been building for many years, but a number of recent developments have moved them into the limelight. These include China's ban of non-industrial imports of plastic waste, the discovery of vast swirling garbage patches in our oceans, and images of plastics-gorged sea creatures that prompted bans of offending products such as plastic straws.

These high-profile images and accompanying stories have led to sweeping demands for immediate reductions in volumes of plastic waste. The reaction is understandable – but the reality is more complicated.

Supply chains are heavily dependent on plastics, and eliminating or reducing the material's usage can have far-reaching consequences for multiple actors. That said, there are huge opportunities to respond to stakeholder demands and cut costs, especially in the area of product packaging.

Packaging accounts for 146 million tons of waste annually and 42% of the global use of plastics. Given these numbers, product packaging is a prime place to start when looking for plastic-reduction win-wins in the supply chain.

However, the task is not straightforward and may involve a lot of work in both the supply chain and the broader market particularly with regard to winning consumer support for the required changes. Existing attitudes and practices are deeply ingrained, and changing them to make way for redesigned packaging is far from trivial. The laundry detergent market offers a salutary example of this change management challenge.

Paradigm shift

Laundry detergent in large, brightly colored plastic jugs is a mainstay product in American homes. But it has taken many years and numerous commercial twists and turns for it to attain this status.

Liquid detergent became the preferred product in the US and EU over the traditional powdered variety in the mid-1970s. At the time, powdered detergents were discovered to have large quantities of surfactants and phosphates that are damaging to human health and the environment. The EU and some US states outlawed phosphates, which led to a negative perception of the product in these regions. Despite changes in powder formats that removed the harmful additives, liquid detergent usurped the traditional product and became the norm in American laundry rooms.

Still, liquid detergent has some notable downsides. The product is a more effective cleaning agent than powder equivalents, but its formula uses more water and containers of the detergent are typically heavier and hence more expensive to transport. As a relatively heavy product, liquid detergent generally requires thick plastic packaging to avoid leakages and other damage while in transit that could make the product unsaleable and compound the environmental and cost impacts.

To address these issues, manufacturers began to concentrate formulas in the mid-seventies. Early concentrated versions of Colgate's Dynamo and Henkel's Purex detergents were introduced, but received very little traction and were quickly pulled off the shelves. Many arguments were put forward for the failure to win consumer support. Limited consumer understanding of concentrates was one possible reason; for consumers bigger packages of non-concentrated detergent translated into bigger value. This may have also been a result of the ritual-based nature of laundry and the difficulty of changing consumer practice (i.e. one cup = one load), as well as the new product's price premium. In addition, the large-size bottles of non-compacted detergent gave them a bigger presence on the shelf.

In short, without an industry-wide shift towards concentrated formulae, there was little reason to keep concentrated detergents on supermarket shelves.

This situation persisted in the United States through the eighties and nineties. Then in 2005, Unilever's brand of detergent, All, released a concentrated version called All Small & Mighty. According to Unilever, the concentrated variant used half the packaging, one-quarter of the water use, and one-third less diesel fuel to transport as compared to the traditional All product.

This version was a hit with consumers. One reason is that it was paired with better consumer education and retail store features. For example, Unilever communicated that the concentrated version had equal washing power to a bigger bottle of the regular liquid detergent. The packaging showed a little bottle with an "equals" sign denoting it to be equivalent to a bigger bottle of non-concentrated detergent. Improved consumer education was another important change. The All Small & Mighty product was demonstrated at stores around the US to show that it was just as effective as its unconcentrated version.

Increasing consumer awareness of concentrated product allowed other manufacturers to follow suit. In 2006, P&G rolled out 2x concentrated formats of most of their major detergent brands: Tide, Cheer, Gain, Era & Dreft. As the market began to shift towards the concentrated product, Walmart gave it a final push by requiring that suppliers deliver at least 2x concentration for all detergent products on Walmart's shelves. The move essentially changed the face of the detergent market.

It also reduced the amount of plastic used as companies switched to smaller detergent bottles. And there were other environmental benefits too. For example, one leading manufacturer reported that its concentrated product used 35% less water compared to the non-concentrated product; an annual saving of 230 million gallons of water. Product delivery required fewer pallets and truck trips.

Continued innovation

Since the major shift in 2007, the detergent market has continued to innovate. In 2012, P&G released Tide pods which contain only 10% water as opposed to 50% in the 2x concentrate detergent product. Tide pods are packaged in a plastic bag instead of a large-format bottle which utilizes much less plastic.

Some of this innovation has been driven by smaller market disruptors. Manufacturers Seventh Generation and Method marketed concentrated formats in the early 2000s with 4x and 3x formulations respectively, but these companies were not big enough to trigger an industry-wide change. In 2018, Seventh Generation released an ultra-concentrated (8x concentrate), bio-based detergent that uses recycled PET for its packaging. Their EasyDose Ultra Concentrated detergent uses 60% less plastic, 50% less water, and weighs 75% less than its traditional format detergent, and is designed to avoid overuse of detergent. Additionally, the lightweight bottle is designed with e-commerce in mind and requires much less space and weight to ship. P&G has followed suit with its new "eco-box" designed together with Amazon. The packaging essentially looks like a wine box with a plastic bag housed in a cardboard package. This design is lighter and uses less corrugated cardboard without affecting the performance of the packaging.

And the market continues to foster innovation. Startup companies are offering entirely new ways of thinking about laundry. For example, a product offered by Grover Collaborative enables customers to buy a reusable detergent dispenser and purchase refill pouches when needed. This novel approach uses less packaging and the lighter units are easier to transport. Another company, Dizolve, sells lightweight strips of laundry detergent that dissolve in each load. With paper packaging and no liquid, the product eliminates the use of plastics and is small and lightweight.

Time to start innovating

As this short history shows, innovative packaging in a mass market – some 900 million bottles of detergent are used annually– can yield major environmental and commercial benefits.

But these win-wins do not come easy. They require innovative thinking throughout the supply chain from

product design and manufacture to customer delivery. And it's not enough to change best practices within companies; innovative products must also win consumer acceptance at an affordable price.

Increasing consumer demand for less plastic presents some formidable challenges for companies – but it also represents a huge opportunity to develop products that are successful from both commercial and environmental perspectives. Moreover, as the liquid detergent story illustrates, the emergence of innovative products (in this case concentrated formulations) can spur the industry-wide shifts that are necessary to achieving change on a large scale.

Such opportunities exist, but companies must be willing to start the journey.

The MIT Center for Transportation & Logistics' Sustainable Supply Chains initiative is exploring commercially viable ways to reduce plastic in supply chains. Companies that are interested in this work should contact Dr. Alexis Bateman, Director, MIT Sustainable Supply Chains, at hickmana@mit.edu.

Courtesy: Supply Chain Management Review

Egg-Unboiling Machine Takes on Fish Oil

This newly discovered technology is the latest in the rising number of breakthroughs around the world using the VFD or the Vortex Fluidic Device. Invented by Professor Colin Raston and his research team at Flinders University in South Australia, the VFD has been called a game-changer for applications across different science fields because of its ability to create a range of novel nanomaterials without the use of toxic or harsh chemicals in the manufacturing process.

Applications have ranged from graphene production, protein folding, slicing carbon nanotubes, biofuel conversion, and drug delivery. Flinders Institute for NanoScale Science and Technology researcher Nikita Joseph said that the most recent trial to enhance fish oil processing had opened new possibilities for the Vortex Fluidic Device.

"Using the Vortex Fluidic Device can encapsulate fish oil with a simpler process than it's conventionally used," Joseph said.

"There is a possibility to produce smaller particles through this method, which may enhance people's absorption of fish oil."

"Through this processing, we aim to improve the omega-3 fatty acids from fish oil. This is important in processing new formulations for the food industry with improved health benefits."

The researchers found that the device can simplify water-in-oil-in-water encapsulation into one process and allows scientists to practice control over the particle size. By changing the rotational speed, tilt the angle, change the concentrations and the ratio of components, adjust the temperature and the flow rates of the VFD, they were able to vary their choice of phospholipids and combinations, changing the nature of the fish oil.

Professor Raston said the small particle fish oil was only one example of the potential VFDs offered. "We have only scratched the surface about what is possible for this device"

In 2015, they used the device to unboil an egg and they were awarded an Ig Nobel Award for creating the VFD. There are now around 30 VFDs around the world, with more being made by 2-D Fluidics Pty Ltd, a company that is owned by Flinders University and First Graphene.

While the VFD is being used in countries including China and the UK for nutraceuticals, cosmetics, food processing, and pharmaceuticals, Professor Raston said he would particularly like to see VFDs used to target drug delivery and reduce the side effects of medications.

"I'm very passionate about that because... [it's] not only reducing side effects, or even eliminating side effects, but most drugs that we take end up in sewage because the body only uses a small amount," he said.

"For every kilogram of drug that you buy over the counter you've got to imagine there's half a ton of waste sitting on the planet somewhere that went into making it.

"And so working out ways of making the drug molecules themselves without generating the waste is also a big ticket item for the VFD."

Courtesy: Sciencetimes.com

DHA - a memory booster?

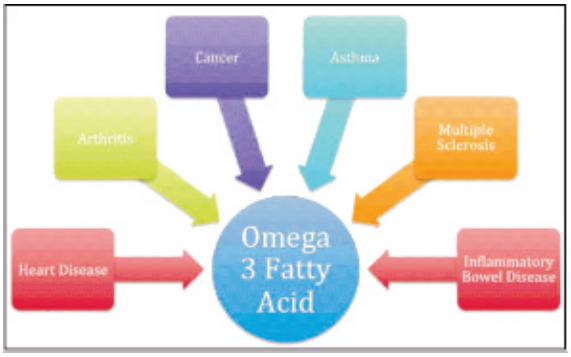
Dr. A. Madhavan*

Docosahexaenoic acid, commonly known as DHA, is a fatty acid known for its role in the growth and functional development of brain in infants. DHA is also thought to be required for maintenance of normal brain function in adults. The deficiency of DHA is associated with deficits in learning and thus, inclusion of added DHA in diet is believed to improve learning ability. The turnover of DHA in the brain is very fast, more so than is generally realized. The visual acuity of healthy, full-term, formula-fed infants is increased when their formula includes DHA. During the last 50 years, many infants have been fed formula diets lacking DHA and other omega-3 fatty acids. DHA deficiencies are associated with foetal alcohol syndrome, attention deficit hyperactivity disorder and other clinical disorders like cystic fibrosis, phenylketonuria, unipolar depression, aggressive hostility, and adrenoleukodystrophy. Lower level of DHA in the brain during infancy has also been linked to cognitive decline during aging and sporadic Alzheimer disease.

Epidemiological studies have shown a strong correlation between fish consumption and reduction in cases of myocardial infarction. The reduction is approximately 50% with 200 mg per day of DHA from fish. DHA is the active component in most fishes. Not only does fish oil reduce triglycerides in the blood and decrease thrombosis, but it also prevents cardiac arrhythmias. The association of DHA deficiency with depression has already been proved. Patients with cardiovascular disease or Type II diabetes are often advised to adopt a low-fat diet with a high proportion of carbohydrate. A study with women shows that this type of diet increases plasma triglycerides and the severity of Type II diabetes and also coronary heart diseases.

Figure-1

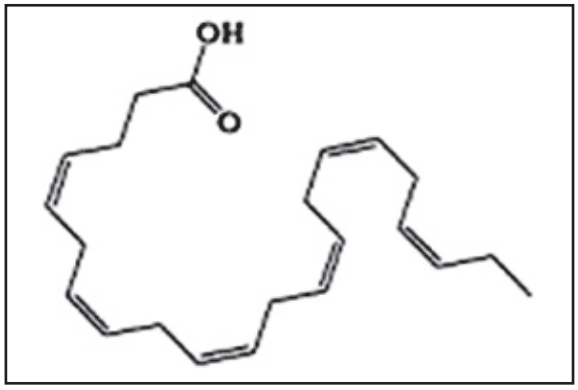
Common health issues associated with shortage of Omega 3 fatty acids in diet



Besides in fatty fishes, DHA is also available in mother's milk and also at low levels in meat and eggs. EPA (eicosapentaenoic acid), another long-chain n-3 fatty acid with 20 carbon atoms, is also present in fatty fish. DHA has a positive effect on diseases such as hypertension, arthritis, atherosclerosis, depression, diabetes mellitus, myocardial infarction, thrombosis, and some cancers.

Docosahexaenoic acid (DHA) is a polyunsaturated fatty acid (PUFA) with 22 carbon atoms and six double bonds in the cis configuration. It is an omega-3 or n-3 polyunsaturated fatty acid.

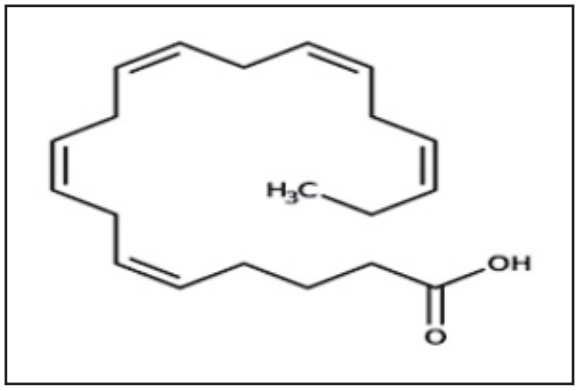
Figure-2



Structure of Docosahexaenoic acid (DHA) {C22H32O2}

Eicosapentaenoic acid (EPA) is one of several omega-3 fatty acids with a 20-carbon chain and five cis double bonds.

Figure-3



Structure of Eicosapentaenoic acid (EPA) {C20H30O2}

Given such a vast knowledge, DHA has been linked with brain growth in infants and children. Many

supplementary diets meant for children of the age group of 4 to 10 have been seen in the market world over with added DHA with a clear claim of enhanced learning capacity. World leaders of health food industry have registered huge sales of their products with such claim, especially in developing countries like India where parents compete to see that their children score higher in exams and competitions. Food regulations of most countries including Europe have accepted this fact and have permitted such claims on labels of supplementary diets. In India, we have at least a dozen such health & nutrition food in the market claiming that their products have DHA which is essential for brain development in children.

The differing news:

A US-based pharmacy, CVS, was recently ordered to refund the purchase price of a falsely advertised dietary supplement. CVS claimed that the plant-derived form of the omega-3 fatty acid, DHA, was clinically proven to improve memory. The advocacy group Center for Science in the Public Interest argued that CVS based its claim on research that did not indicate that omega-3s boost cognitive function.

Health organizations around the world strongly recommend eating food rich in omega-3, since research indicating a benefit to the cardiovascular system continues to strengthen. However, it is less clear whether the brain can garner from this group of fatty acids. Richard Bazinet, associate professor of nutritional science at the University of Toronto in Ontario, Canada, says that 30 years ago researchers noticed that infants who were breast fed had higher levels of DHA in the brain than infants who consumed baby formula food. That observation sparked more research on the role of DHA on brain and the nutritional choices that ensure a sufficient supply.

The human brain is primarily composed of fat. Phospholipids account for almost half of the organ's weight. One of the most important structural molecules is the fatty acid DHA, which comprises the cerebral cortex, synaptic membranes, mitochondria, retina photoreceptors, and more. Humans acquire omega-3s during development stage, but several factors determine the production of omega-3s throughout life.

For the first few years of life, humans are dependent on their mothers for essential fatty acids. The fetus acquires DHA from maternal diet and the mother's stored lipids. In the final trimester, maternal DHA levels drop dramatically as the fetus needs about half a gram a day to form its retina, liver, and brain. At birth, the human brain is about 70% developed and continues to grow for about six years. Ideally, infants must obtain their fatty acid requirement from mother's milk. Human milk contains 30 times the DHA levels of milk from other animals.

It is also reported that beyond the infancy stage, humans have the metabolic capacity to synthesize specific omega-3s from their diet as needed, and no longer require a direct supply. Along with DHA, other nutritionally important omega-3 PUFAs, like eicosapentaenoic acid (EPA) and docosapentaenoic acid (DPA), are synthesized by an enzymatic desaturation of alpha-linolenic acid (ALA). It has been found that genetics can influence the speed and efficiency of these reactions. One study found that subjects with a desaturation gene variant convert ALA to important omega-3s more slowly than those without the variant, implying that supplementation may be effective at increasing omega-3 concentrations in the blood of some individuals, but not in others.

However, the amount of omega-3s in a person's blood does not indicate the amount of omega-3s in the brain. To get an idea of how much of these molecules are in the brain, scientists rely on animals. Mouse studies show that omega-3 synthesis is rare in the brain and that levels are maintained by an accumulation in blood plasma from dietary sources. Both EPA and DHA appear to cross the blood-brain barrier in mice, but only DHA is detectable among the brain's phospholipids. Despite not being detectable, new studies suggest that EPA enters the brain and gets metabolized very quickly to DHA.

The presence of PUFAs in brain membranes serve a variety of functions pertaining to neurological signaling. DHA is among a series of nuclear receptor ligands that participate in multiple transcription pathways involving dopamine, the feel-good hormone. Neuronal and synaptic membranes contain high concentrations of DHA. It affects ion permeability, elasticity, protein function, phase behavior, and fusion. A range of studies confirm DHA's involvement in the development and survival of dopamine systems within the brain. Both animal and human studies indicate that omega-3 deficiencies during early brain development can alter dopamine upkeep in the organ leading to disorders like depression or schizophrenia. Researchers looked at specific tissue within the blood of schizophrenic patients and found that, compared to controls, they contain a lower amount of omega-3s. Low dietary and tissue levels of omega-3s in rodents have also been consistently correlated with neurobiological indicators of depression.

In 2001, the FDA began permitting the addition of DHA to infant formula in the United States. Presently, manufacturers are not required to list the amounts of DHA added to infant formula on the label. However, most infant formula manufacturers provide this information. The amounts added to formulas in the US range from 8 to 17 mg DHA/100 calories.

However, in November 2019, a team of researchers at the University of East Anglia, United Kingdom, funded by the World Health Organization, published the results of a random-effects meta-analysis evaluating 31 clinical trials that assessed the effectiveness of long-chain omega-3 supplements in treating depression (1). It was reported that long-chain omega-3 supplementation probably has no demonstrable effect in preventing depression or anxiety symptoms.

Despite all the evidence of DHA's participation in crucial mechanisms of mental health, the finding on supplements indicates a gap in scientific understanding about how consuming omega-3 fatty acids can improve membrane concentrations established during development.

DMA is Essential through All Stages of Life

Pregant Women

- Supports maternal health.
- Promotes a normal gestation period.
- Promotes fetal brain and eye development.

Infants & Children

- Brain and eye development.
- Boost memory.
- Better mood, focus and sleep.

Children & Aults

- Maintains normal function of brain and eye.

Seniors

- Supports brain and eye health.
- Promotes memory.

DMA Specifics

- Supports integrity of the neuron's membranes.
- Required for proper visual and neurological development along with brain development during pregnancy.
- Needed for optimal brain function from infant to adult.
- Insufficient DMA may negatively affect mood and memory.

Conclusion:

The existing concept that added DHA will enhance learning capacity in children or DHA helps brain development in children, needs to be reviewed. This will, certainly, have a long- standing impact on the marketing campaigns of many supplements meant for children. Food labeling regulations in respect of added DHA in health supplements also need further examination and reviewing.

*Dr. A. Madhavan had been Asst. Director with Directorate of Vanaspati, Vegetable Oils & Fats, Department of Food & Public Distribution, Govt. of India and with Food Safety and Standards Authority of India on deputation. Post retirement, he worked as Adviser to Hon'ble Union Minister of State for Health and Family Welfare and later with Fare Labs Pvt. Ltd, Gurgaon as it's Vice President. Presently, he is also President, Association of Food Scientists and Technologists (India) - Delhi Chapter and Director, Centre for Quality and Food Safety, New Delhi.

Chamomile Oil

What is Chamomile Oil?

Chamomile oil is extracted from the flowers of the chamomile plant, which is very popular as a flowering plant. There are two types of chamomile, the Roman chamomile, which is scientifically known as Anthemis nobilis and the German chamomile, whose scientific name is Matricaria chamomilla. Although the essential oils extracted from both varieties are quite similar in some medicinal properties, their composition is different and they do possess certain specific qualities that are worth noting.

Roman essential chamomile oil is composed of alpha pinene, beta pinene, camphene, caryophyllene, sabinene, myrcene, gamma-terpinene, pinocarvone, farsenol, cineole, propyl angelate, and butyl angelate. German chamomile oil, on the other hand, is composed of azulene (also called chamazulene), alpha bisabolol, bisabolol oxide-A & B, and bisabolene oxide-A.

While Roman chamomile oil is more calming and works as a better emmenagogue. German chamomile oil is a very powerful anti-inflammatory agent due to the presence of a compound called azulene. Azulene is a nitrogenous compound which is responsible for giving the oil its characteristic deep blue color. There are several other medicinal properties of chamomile oil, and the properties given below include those of the Roman as well as the German variety, except where mentioned otherwise

Health Benefits of Chamomile Essential Oil

You can find a surprising number of health benefits in essential oils; chamomile oil is one of the best ways to improve your overall health.

Removes Agents

As a sudorific, both varieties of chamomile oil induce profuse perspiration, which helps to remove toxins and agents that cause infections while simultaneously cooling down the body and effectively providing relief from fever, thus serving as a febrifuge.

Prevents Infections

Both varieties have very good antiseptic and antibiotic properties which do not let biotic infections develop, which arise due to bacteria and fungi. They also eliminate infections that are already present. These are good vermifuge agents as well, which kill all sorts of intestinal worms. If applied to the hair, it kills lice and mites, keeping the hair and scalp free from infections and damage.

Relieves Depression

Both varieties have been found to be very effective in fighting depression. They eliminate feelings of sadness, depression, disappointment, and sluggishness while inducing a sort of happy or charged feeling. Even smelling these oils can help a lot in overcoming depression and bringing about a good mood.

Reduces Anger

Roman chamomile is effective in calming down annoyance, anger, and irritation, particularly in small children, while German chamomile is effective on adults in curing inflammation, particularly when it is located in the digestive or urinary system. Both varieties reduce blood pressure and curb the swelling of blood vessels as well.

Improves Digestion

Being a stomachic, they tone up the stomach and ensure its proper function. They also promote the secretion of digestive juices into the stomach and facilitate digestion. Being hepatic, they ensure a good liver health and the proper flow of bile from it. They are also considered cholagogues, meaning that they increase the secretion of hydrochloric acid, bile, and enzymes in the stomach, thereby promoting digestion.

Treats Symptoms of Rheumatism

They treat dysfunctions of the circulatory system, stimulate circulation and detoxify the blood from toxins like uric acid. Thus they help to treat ailments like rheumatism and arthritis, which are caused due to

improper circulation and accumulation of uric acid. These abilities classify them as good antiphlogistics, agents which reduce swelling and edema.

Skin Care

They are very popular in the world of cosmetics, since they diminish the scars, marks, and spots on the skin, and on the face, making them a cicatrizant. They also protect wounds, cuts, and bruises from becoming infected, therefore also serving as a vulnerary.

Relieves Pain

They have analgesic properties, which effectively reduce pain in the muscles and joints. They also decrease the severity of headaches, sinuses, toothaches, and bone injuries. They are also very effective in relieving the severe pain of neuralgia by constricting the blood vessels that surround the ninth cranial nerve and relieve the pressure.

Removes Excess Gas

They are very good at expelling gas from the intestines and stomach while also curbing additional gas formation. This also helps to relax the body and lower blood pressure. What is even more important is that the effect of the oil also eliminates the serious risks of excess gas, such as the trapping of gas in the windpipe, which can even be fatal.

Boosts Nervous System

They calm almost all nervous disturbances or hyper-reactions which result in convulsions, spasms, nervousness, and loss of control over limbs. They are nervine, meaning they keep the nerves and the nervous system in a state of good health and proper functioning.

Tones of the Body

They are a tonic in nature, meaning that they tone up the skin, muscles, and internal organs.Removes scars and spots from the skin.

Other Benefits

Chamomile essential oils are anti-allergenic, and they help cure acne by removing toxins and cleaning sebaceous and eccrine glands through sweating. jp^-As a diuretic, they clean up the urinary system and the kidneys by stimulating increased urination, In addition, they detoxify the blood and even increase strength. They can help cure viral infections like mumps or measles and can be used in mouthwashes as well, in order to keep away bad breath and eliminate oral infections. German chamomile oil is a vasodilator, so it reduces blood pressure by relaxing the constriction of vessels, thereby protecting heart health and reducing the chances of developing conditions like atherosclerosis.

Word of Caution: There are no specific risks of using either of the oils that have been discussed, except that it should be avoided if someone has a direct allergy to chamomile or to any other members of the ragweed family, to which it belongs.

Laugh Out Loud

Three doctors are out geese-hunting. A gaggle flies over and the oncologist raises and then lowers his gun. "I better conduct an MRI first to determine if those were really geese

." Some more geese fly by & the endocrinologist raises his gun and then lowers it. "I'll need some bloodwork to conduct an A1C and determine what those birds were first

." Some more geese fly over. The trauma doc raiseshis shotgun and blows them out of the sky. "What were those things, anyway?" he asks.

****

Newton, Pascal and Archimedes are playing hide and seek. Archimedes starts to count, Pascal hides in a bush, and Newton draws a square on the ground and steps into it. Archimedes finds Newton first, of course, but Newton replies, "Nope. One Newton on one square meter is equal to one Pascal.

When you die, you should have your brain donated to science. I hear they're trying to come up with the perfect vacuum

****

Q. : What do clouds do when they become rich?

A. : They make it rain

****

Two hydrogen atoms are at a party and bump into each other. The first one says, "Hey, grab that electron, it's mine!" "How do you know?" asks the second. "'Cause I'm positive!" the first replies

****

I went down the street to a 24-hour grocery store. When I got there, the guy was locking the front door. I said, "Hey! The sign says you're open 24 hours." He Said, "Yes, but not in a row!"

****

Reaching the end of a job interview, the Human Resources Officer asks a young engineer fresh out of the Massachusetts Institute of Technology, "And what starting salary are you looking for?"

The engineer replies, "In the region of $125,000 a year, depending on the benefits package."

The interviewer inquires, "Well, what would you say to a package of five weeks vacation, 14 paid holidays, full medical and dental, company matching retirement fund to 50% of salary, and a company car leased every two years, say, a red Corvette?"

The engineer sits up straight and says, "Wow! Are you kidding?"

The interviewer replies, "Yeah, but you started it.

****

Pappu-: My internet is not working properly..

Officer:- :Ok, Double click on “My computer”

Pappu:- I can’t see ur computer..

Officer:- No no.. click on “My computer” on ur computer..

Pappu:- How can I click on ur computer from my computer?..

Officer:- listen.. There is an icon labelled “My Computer” on ur computer.. Ok. double click on it..

Pappu:- what the hell, what is your computer doing on my computer..???

Officer:- Double click on ur computer..

Pappu:- On which Icon i’ve to click..

Officer:- “My Computer”..

Pappu::-…Oh u Idiot…… Tell me where is ur office…I’ll come there and click on ur “Computer.

****

A teacher asked her students to use the word "beans" in a sentence.

"My father grows beans," said one girl.

"My mother cooks beans," said a boy.

A third student spoke up, "We are all human beans."

****

A little girl to her mother, “Mommy, today in school I was punished for something that I didn’t do.” The mother said in anger, “But that’s right! I’m going to have a talk with your teacher about this … by the way, what was it that you didn’t do?” The little girl replied, “My homework.

****

Q. : What did the 30 degree angle say to the 90 degree angle?

A. : "You think you're always right!"

Member's PAGE

SOLID SHAMPOO

R. C. Arora
Retd. Manager QC - S.I.E.L. (New Delhi)

Shampoo is a basic hair care product representing the largest segment of hair care cosmetic. The global shampoo Market continues to grow and between 2014 t0 2018, there has been an 71% increase in global shampoo launches indicative of the innovation in the market place for this well established personal care product.

Shampoo is a typically in the form of viscous liquid but an innovative Solid format is growing in Popularity with consumers . Shampoo bars are not only easy to use and cleans the hair but their compact, solid format full of hair loving ingredients makes them ideal.

Shampoo bars were invented about 20 years ago. They were so revolutionary that a shampoo bar acted as the perfect base for all natural ingredients, which why there are several different varieties to choose from , containing everything from cocoa butter and honey to peppermint and rosemary.

SIMPLE SOLID SHAMPOO BAR FORMULA

PHASE	I N C I NAME	FUNCTIONS	% W/W
A	SODIUM COCO SULFATE	PRIMARY SURFACTANT	32
A	SODIUM LAURYL SULFATE	SECONDARY SURFACTANT	30
A	COCAMIDOPROPYL BETAIN	SECONDARY SURFACTANT	8
A	DECYL GLUCOSIDE	SECONADRY SURFACTANT	7.5
B	CETYL ALCOHAL	EMOLLIENT	3
B	DISTEAROYL DIAMMONIUM CHLORIDE, CETEARYL ALCOHAL	CONDITIONER, THICKNER	9
B	COCOA BUTTER	EMOLLIENT, THICKNER	6
C	CITRIC ACID	PH ADJUSTER	1.5
C	BENZYL ALCOHAL, DEHYDROACETIC ACID	PRESERVATIVE	1
C	STYRAX BENZOIN GUM OIL	FRAGRANCE	1.5
C	PATCHOULI OIL	FRAGRANCE	0.5

MANUFACTURING PROCESS

1 Mix Phase A ingredients in a container and melt in a water bath or double boiler, stirring occasionally. This can take a while (over 20 Minutes) and the result won't be liquidbut rather pasty.

2 Mix Phase B ingredients in a separate container and melt in a water bath or double boiler and stir occasionally.

3 Once Phase A is soft and homogeneous, add Phase B into Phase A and stir using spoon or a stirring rod.

4 Cool the mixture to approx. 45 C making sure it's still soft. Add Phase C ingredients and stir,

5 Transfer the mixture into a mould (Silicone or plastic mould works best) and put it in a Refrigerator for a couple of hours, until solidifies.

6 un-mould the shampoo bar and leave to dry for a couple of days.

Shampoo bars offer an Eco friendly alternative to traditional shampoo bottles. One shampoo bar provides 80-100 washes and is equivalent to 3x250 gm bottles of liquid shampoo resulting in less plastic packaging and waste in all aspects of their life. The other advantage are , easy to transport, can be used for a longer time and thanks to more Microbiological stability than liquid formulations. For liquid shampoos , preservative are used for excess of water being used in liquid format. Solid format, instead could decrease or even eliminate water in the formula.

The main ingredient in a shampoo bar is solid Surfactant. It is really important to include enough as this will contribute to the solid form with a little water . This makes the manufacturing cost of a solid shampoo much higher than the liquid shampoo. But on the other hand, they last longer than liquid shampoos and also don't require packaging with environmentally friendly credentials.

An emollient, such as Cocoa Butter can also be used, which will help to soften and nourish the hair.Alternatively Cetyl Alcohal is a fatty alcohol that will help to soilidify the shampoobar and also provide a nice emolliency to the bar and hair.

CONLCLUSION

Solid shampoo bars are a great alternative to liquid Shampoos as they are Economical , self preserving, since no synthetic preservative have to be added to keep them Fresh. They are gentle enough to most sensitive scalps and no –spill alternative to liquid shampoo.

LIPID UNIVERSE

Quarterly News Letter of Oil Technologists' Association of India, North Zone

Advertisement Tariff

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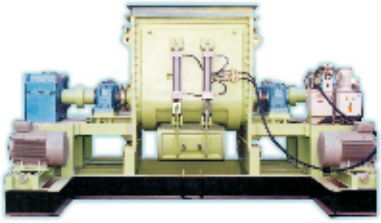

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