

## Q&A: Science behind Palm Oil

An interview with Dr Jean Graille



Dr Jean Graille is a world-renowned authority on fats and oils. He is an expert in biotechnology with a focus on fats and lipids. He completed his studies at the Ecole Nationale Supérieure de Chimie de Marseille (National Chemical Engineering Institute of Marseilles).

He began working as a researcher at the Institut des Corps Gras (Institute for Fats and Oils) before continuing his extensive scientific career in the Agribusiness Programme of CIRAD where he managed the team for 'Food and Non-Food Substances – Lipid Technology Sciences'. Dr Graille won the *Chevreur* medal in 1997 and the Kaufmann prize in 1999 – the first French individual to receive the prize.

In this Q&A, he discusses the poor understanding of fats and oils in France and Europe and, among other aspects, emphasises that palm oil is free of trans fats.

### 1. In your opinion, do the French have an adequate understanding of oils and fats?

Absolutely not! Like all global consumers, the French are far from having a good understanding of foods that are commercially available to them, and fats and oils are no exception. Two 'statements' are often made to illustrate this point:

- *Butter contains more fat than sunflower or canola oil.* Not true! Butter contains 20% water. It is a 'water-in-oil' emulsion containing 80% fat, while sunflower and canola oils contain 100% fat.
- *Olive oil contains more fat than walnut oil.* Wrong! Both consist of 100% fat.

However, it is interesting to note that both beliefs come from sensory perceptions and have to do with the appearance of these products and how they feel in our mouths. Beliefs based on sensory perceptions have nothing to do with scientific evidence.

These are accurate claims supported by scientific research:

- Tobacco and alcohol are deadly.
- It is dangerous to consume too much sugar
- You need to exercise and eat 4-6 servings of fruit or vegetables per day and avoid eating too much fat.
- Oils containing Omega 3 and 6 are healthy.

These beliefs are not backed by scientific evidence and lead us toward misinformation:

- Palm oil is responsible for cancers and cardiovascular diseases because it contains a lot of saturated fat.
- Palm kernel oil is also responsible for this type of disease.

Unfortunately, consumers assimilate this information and, although few of them read the labels on food items on the shelves, such claims grow to unfairly demonise an entire segment of the agro-food industry. The idea that something may damage your health is a powerful factor in the spread of false information.

2. Belgian Senators Sabine de Bethune and Cindy Franssen have proposed to limit the content of palm oil in food products to 2g per 100g of oil or fat. They have argued that using palm oil is as dangerous as using trans fats. Is there any evidence for this claim? What negative effects could there be from the Senators' proposal to limit palm oil?

There is no scientific evidence that supports the Honorable Senators' comments. However, there is plenty of research and global scientific literature demonstrating that the regular consumption of trans fats is dangerous. Scientific studies all lead to the same conclusion – that consumption of trans fats induces cardiovascular disease and cancer, particularly breast cancer. Conversely, palm oil is completely free of trans fats. Palm oil contains a balance of saturated and unsaturated fatty acids and its consumption is not linked to any form of cancer.

When the Honorable Senators proposed to limit the content of palm oil to 2g per 100g of oil or fat, they were

undoubtedly confused with the decision by several EU member-states to limit the content of trans fats in fats and oils; in fact, Denmark has set this limit to 2%.

Note that palm oil is a natural product that does not cause health problems, given its unique chemical structure. Furthermore, palm oil contains Vitamin E and is the most significant source of tocotrienols, which offer protection against cancer, and is pro-Vitamin A.

Finally, do not forget that we need saturated fat as our cell membranes must be very fluid in order to allow waste to exit and nutrients to enter our cells. Mother Nature designed the lipid composition of cell membranes to include a precise and smart ratio between saturated, monounsaturated and polyunsaturated fats.

These simple reminders show how sorely mistaken these two Honorable Senators are in tabling such proposals and engaging in scare-mongering.

3. Another Belgian Senator, Muriel Targnion, has stated that the consumption of palm oil increases the risk of breast cancer. Is this true?

Absolutely not! Senator Targnion makes an erroneous statement when citing the joint report by the Institut National de la Santé et de la Recherche Médicale and the Institut Gustave Roussy. The joint report published by these two research bodies finds that trans-oleic acid and trans-palmitoleic acid are suspected of causing cancer – especially breast and colorectal cancers – but Senator Targnion erroneously claims that these fatty acids are found in palm oil. This is completely false!

Like all common vegetable oils, palm oil does not contain these trans fats and it is in fact completely free of all trans fats. Only partially hydrogenated (i.e. processed) soybean and canola oils contain trans fats in significant amounts.

It should be pointed out that the trans fats referred to by Senator Targnion are found in products of ruminant origin, in particular in dairy products such as butter, creams and cheeses, as well as in the fat found in meat. These trans fats are a result of natural hydrogenation caused by the anaerobic microbial flora inside the stomach of ruminants.

What Senator Targnion should have pointed out was that palm oil is the only oil that contains tocotrienols, which are believed to offer strong protection against cancers, especially breast cancer. Many medical research studies have been performed on tocotrienols from palm oil and all have demonstrated good protection against cancers, including breast cancer. Some studies have even shown a clear association between palm oil consumption and cancer remission.

4. Swiss MP Dominique de Buman claims that rapeseed oil produced in Switzerland is healthier than palm oil. Is this true? MP de Buman believes that rapeseed oil and butter could easily replace palm oil in food products in Switzerland. What are the benefits of using palm oil, and what are the potential risks for Swiss consumers in replacing palm oil in their diet?

MP de Buman's statement is not scientifically acceptable. The best option for consumers is to make

use of a range of oils and fats to ensure a balanced intake of saturated fat as well as Omega 9, Omega 6 and Omega 3 fats.

In fact, all fats are not equal and all have their advantages and disadvantages. Rapeseed oil contains all types of fatty acids and in particular linolenic acid (Omega 3), which is also found in soybean oil and oils derived from nuts. However, this makes it sensitive to oxidation and heat. This is why scientists advise to consume this oil fresh because the combinations of oxidative and thermal effects generate unnatural toxic molecules.

This is also why it is recommended to use a far more stable oil, like palm oil, for frying and to prolong the shelf-life of foods. Palm oil has numerous other qualities; it is free of trans fats as well as genetically modified organisms (GMOs). In addition, palm oil's unique physical properties make it very attractive for a wide range of food applications to accentuate the taste and texture of foods.

The preparation of margarines containing suitable quantities of sunflower, rapeseed and palm oils are a perfect example of products that offer a balanced intake of the four types of natural fatty acids.

Regarding MP de Buman's comments on butter, at the nutritional level, butter contains many short fatty acids that are quickly metabolised to make energy, but also very long chain fatty acids that have been found to cause cardiovascular problems.

The complete replacement of palm oil in food products is unwelcome because it will change the taste of foods and it will also lead to Swiss consumers consuming more dangerous trans fats. It seems that, while MP de Buman wants to stop using certain types of imported

products in order to further promote the Swiss rapeseed and dairy industries, he has not fully considered the implications of his erroneous statement on the health of consumers.

5. In light of the remarks made by Belgian Senators de Bethune, Franssen and Targnion and Swiss MP de Buman, do you think that certain people may be guilty of making alarmist claims regarding palm oil?

Unfortunately, yes. Certain people have taken advantage of their own position to make alarmist claims while certain members of the anti-palm lobby have an interest in denigrating the image of palm oil so that other vegetable oils or dairy fats may benefit.

However, this is a dangerous game and may ultimately result in more damage to competing vegetable oils if a malicious campaign were launched, evoking the dangers of GMOs and inferior yields that result in the need to deforest 10 times more land to produce comparable amounts. Specifically, the cultivation of soybean has resulted in the loss of 10 times more biodiversity in the Amazon than oil palm.

6. What are trans fats? How do they relate to palm oil?

Let us start by reiterating that palm oil does not contain trans fats. In their natural state, trans fats can be found in the fats of ruminants and therefore in milk and dairy products, butter, cream, cheeses, etc. However, they are present in small amounts. They are formed through the partial hydrogenation of unsaturated fatty acids in

the rumen of cattle by the microbial flora inside this organ.

Trans fats are also found in partially hydrogenated oils – but in significant amounts. Thanks to the use of palm oil – which is entirely trans fat free – we have been able to develop a wide range of margarines and spreads and cooking fats that do not contain hydrogenated oils.

7. Regarding the myths surrounding palm oil, what are the key points that French consumers need to remember about palm oil and its effects on health?

Consumers need to remember that scientific researchers consider refined palm oil as having a neutral or positive effect on health; its saturated fatty acids are not dangerous. It contains a small amount of compounds such as carotenes, tocopherols and above all tocotrienols that have a powerful protective effect against cancers and cardiovascular disease.

Palm oil is a valuable ingredient for the European food industry because it enables an enormous range of manufacturing processes at a lower cost and at no health risk to the consumer.

8. In your scientific paper, reference is made to anti-palm oil lobbies and the ridiculousness of the current debate. What is your opinion of the demonisation of palm oil by certain players in the retail sector?

Palm oil has been targeted unfairly in a campaign to demonise it, primarily through the activities of anti-palm oil lobbies that can be clearly identified, namely

sunflower and canola for Europe. In fact, palm oil is the most popular vegetable oil in the world with global production in 2012 reaching 51 million tonnes compared to 41 million tonnes for soybean, followed by canola at 23 million tonnes and sunflower at 14 million tonnes. This supremacy in the global market has not pleased producers of competing vegetable oils.

Anti-palm oil lobbies know that it is very easy to make false claims about a certain topic and target these claims at uninformed consumers who quickly assimilate them to become accepted beliefs. Once disseminated, these claims can only be countered and eradicated by a laborious process of education centred on the promotion of scientific facts.

Communications professionals know very well how this works and, in an age where correct and false information can circulate globally in real-time thanks to the Internet, television, and newspapers, it has become extremely easy to reach out and cause alarm among a great number of consumers by providing them with 'information' on a particular subject. This is particularly effective when a supposed health-risk is emphasised and associated with the consumption of a particular product.

In the case of the anti-palm oil lobbies, misinformation activities reach their apex when major television channels decide to address a topic like 'the effect of palm oil on human health and the environment' and to provide a platform for doctors who are self-professed 'nutritionists' or to environmentalists who try to educate us on 'healthy living' or how to be responsible citizens.

In France, the success of such communication or misinformation campaigns did not go unnoticed by players in the retail sector who ultimately distribute products containing palm oil. Given the significant

financial interests at stake, they saw the attacks on palm oil as an opportunity to promote their own range of 'palm oil-free' products. Under the pretext of consumer health, which remains paramount, certain brands took 'social action' by declaring that they would no longer offer any products containing palm oil to their customers. In doing so, the brands believed that they had regained their credibility and increased their influence over customers through cheap, opportunistic advertising.

9. France is famous for having banned genetically-modified agriculture from its territory. Do you think that most French consumers know that palm oil does not contain GMOs?

Palm oil actually has the advantage of not containing GMOs. The oil palm has been improved through traditional breeding selection techniques. In Southeast Asia, the palm species *Elaeis guineensis*, originally from West Africa, has been successfully cultivated. There are extremely high yields, often exceeding 4 tonnes per hectare in certain areas.

To this day, palm oil has never been produced from transgenic crops. On the other hand, soybean, canola and corn oils from both the North and South American continents likely come from transgenic crops.

10. Why do food producers like palm oil so much?

Palm oil is a key ingredient for many food producers because it has many desirable qualities. For instance, it is used to give certain foods a specific texture and consistency. In addition, palm oil is popular – not only

does palm oil require limited processing, but it stands up well against the thermal and oxidative stress that is encountered during cooking and frying, due to the fact that it contains few polyunsaturated fatty acids which are very sensitive to heat and oxygen. Finally, palm oil gives foods a longer shelf-life as its tocopherols (Vitamin E) and tocotrienols (Vitamin E analogs) protect against thermo-oxidative degradation.

### 11. Why do food manufacturers prefer palm oil and its derivatives to hydrogenated oils (soybean and canola)?

Producing goods with palm oil or its derivatives results in products that are more stable, and without any 'off' flavours or unpleasant odours when cooking or reheating; this is not at all the case when shortenings manufactured from liquid oils are used.

In essence, industrial manufacturers prefer palm oil and its derivatives because these provide a broader range of applications at a lower cost – for instance, very specialised stearins are obtained through fractionation of palm oil.

For example, cocoa butter equivalents (CBE) are produced with thermoplastic characteristics identical to cocoa butter. CBEs costs five to 10 times less than

cocoa butter and are very important from a technical point of view. The European Union has authorised the use of CBE in cocoa butter by up to 5%. Excellent 100% CBE chocolate can be found in Malaysia, which is not surprising because the cocoa is what gives the flavours, not the fat, which only provides the 'melt in the mouth' sensation due to the properties of cocoa butter or CBEs.

### 12. What should food manufacturers and retailers do in order to prevent the spread of misinformation on fats and oils in France?

Unfortunately, the spread of incorrect information and misinformation is a serious problem. While it is true that it is more complicated to provide information on a formulated food that contains 10-20 different ingredients than on a basic product, producers can counter the spread of misinformation by providing scientifically accurate information on food labels.

*This is an edited version of an interview with 'The Oil Palm'. For more information, contact [info@theoilpalm.org](mailto:info@theoilpalm.org)*