

A glass pitcher is pouring a golden stream of palm oil onto a white plate. The plate contains a piece of meat, a cucumber, a yellow vegetable, and some green herbs. The background is a soft, out-of-focus white.

PALM *Oil*

Health and Nutrition

Consumption and sales have increased over the past 20 years, together with its use in foodstuffs

Palm oil production is the highest in the world

It is now positioned as one of the main products in the oils and fats industry





A versatile oil used in a wide variety of applications

In the food industry, it is a very reliable raw material with multiple nutritional benefits



Introduction


Oils and fats have been used by mankind during years immemorial, initially for anointment and then as ingredients in a wide variety of foods and culinary preparations, adding particular sensory and nutritional characteristics. Among vegetable oils, palm oil is the most consumed in Colombia and the world because of its versatility, its affinity in mixes with other raw materials, and its nutritional qualities.

Oil palm is the most productive oil seed crop in the planet. On average, one hectare planted with oil palm yields between six and ten times more oil than other oil-producing fruits. Since its genesis in Western Africa, named *Elaeis guineensis* Jacq., and in America *Elaeis oleifera*, American palm or "noli", it has coexisted in harmony with other plant species in tropical soils of Asia, Africa and America. Oil palm is unique in that its fruit yield two types of oils: palm oil derived from the mesocarp or soft portion, and kernel oil derived from the nut, each with their own distinct characteristics.

By-products have been distributed and used for decades throughout the world in the form of edible oils and shortenings, animal feed, cosmetics, biofuels and detergents. Colombia is the top producer in Latin America and fourth in the world, with a total planted area estimated at 466,000 hectares in 2015.



This document is a compilation of the more relevant nutritional facts of palm oil, supported by national and international scientific evidence



Palm oil is a key ingredient for a healthy diet, with recognized positive effects on human health

Highlights of the importance of palm oil

Balance

Palm oil is characterized by an equal proportion of saturated fatty acids, mainly palmitic acid (approximately 44%) and unsaturated fatty acids, mainly oleic acid (approximately 40%). (Icontec, 2011; Codex Stan 210, 1999).

World recognition

The World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) recognize it as safe.



Because of its fractions



Given its composition, palm oil may be fractionated readily into olein (65-70%) and stearin (30-35%). The olein fraction is liquid at ambient temperature and used in the production of oils; and the stearin fraction, due to its solid form, is ideal for use in margarines and spreads (Akoh *et al.*, 2012)



Naturally free of trans fats


Due to its content of saturated and unsaturated fatty acids and its semi-solid consistency, palm oil does not require hydrogenation for use in bakery products, margarines, cookies and frozen foods, thus avoiding the formation of trans fats known to be harmful for human health and to cause increased risk of cardiovascular disease (Garshick *et al.*, 2014; Mozaffarian *et al.*, 2009; Mozaffarian *et al.*, 2006; Mozaffarian *et al.*, 2004).






Naturally cholesterol-free

Like all vegetable oils, palm oil is naturally free of cholesterol (Avalos García *et al.*, 2009).



Characteristic triglyceride structure

Palm oil, like all other vegetable oils, contains mainly triglycerides which are lipids formed by a glycerol chain with three fatty acids on positions sn-1, sn-2 and sn-3. It is a known fact that fatty acids in position sn-2 are absorbed predominantly over fatty acids located in positions sn-1 and sn-3. Palm oil contains oleic acid in position sn-2 (May & Nesaretnam, 2014).



Palm olein behaves like a monounsaturated oil

Palm oil contains almost 85% of its unsaturated fatty acids in position sn-2, which explains why it behaves as a monounsaturated oil, characterized by multiple nutritional benefits (May & Nesartnam, 2014; Ong & Goh, 2002; Sambanthamurthi *et al.*, 2000).







No negative effects on cholesterol

It has been shown that consuming palm oil as part of a balanced diet does not have a negative effect on blood cholesterol. Actually, the opposite is true. Palm oil intake increases HDL cholesterol levels and does not induce changes in total cholesterol, LDL or triglycerides (Odia *et al.*, 2015; Oguntibeju *et al.*, 2009; Sundram *et al.*, 1977). Current scientific studies have shown that OxG palm oil, originally from Latin America and characterized by a high content of oleic acid, has similar effects on the lipid profile as those of extra-virgin olive oil (Lucci *et al.*, 2016).



Rich in carotenoids

Red palm oil contains 15 times more carotenoids than carrots. These antioxidant compounds are characterized by their action as provitamin A in the body. This vitamin is critical for adequate development of vision and of the immune system. It has been shown that red palm oil is an excellent option to fight vitamin A deficiency in children, pregnant women and adults (Rice & Burns, 2010; Zeba *et al.*, 2006; Solomons & Orozco, 2003; Radhika *et al.*, 2003; Zagr e *et al.*, 2003; Canfield *et al.*, 2001; Lietz *et al.*, 2001).

An important source of tocotrienols

Palm oil is one of the main natural sources of tocotrienols, a type of vitamin E with antioxidant, anti-inflammatory and neuroprotective characteristics. Numerous studies have shown that these components improve the lipid profile, reducing the risk of developing cardiovascular diseases (Nur Azlina *et al.*, 2015; Gopalan *et al.*, 2014; A Mat Daud *et al.*, 2013; Chin *et al.*, 2011; Budin *et al.*, 2009; Sen *et al.*, 2007).





Oil palm is an excellent option for deep frying

Because of its fatty acid composition and its antioxidant content, palm oil is highly resistant to oxidation and polymerization processes. Consequently, it can tolerate high temperatures without producing sticky residues or undergoing rapid breakdown, thus becoming the best option for industrial and home use (Mba *et al.*, 2015; Andreu-Sevilla *et al.*, 2009; Ismail, 2005).

Characteristically not
a genetically modified
crop (Non-GMO)



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**Executive Director of Fedepalma**

Jens Mesa Dishington

General Director of Cenipalma

José Ignacio Sanz Scovino

**Strategic Commercial
Management Unit**

Mauricio Posso Vacca

**Special Human Health and
Nutrition Project Leader**

Alexandra Mondragón Serna

**Special Human Health and
Nutrition Project Analyst**

Catalina Pinilla Betancourt

Editorial Coordination

Yolanda Moreno Muñoz

Esteban Mantilla

Production

Ginna Torres Producciones. Atelier S2dio

Photography

Fernando Valderrama Sánchez

Layout

Jenny Angélica Ramírez

Printing

Javegraf

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National Federation of Oil Palm Growers, Fedepalma
Carrera 10A N° 69A - 44 | Phone 313 8600
Bogotá D.C., Colombia
www.fedepalma.org

