

# PALM OIL HEALTH FACTS

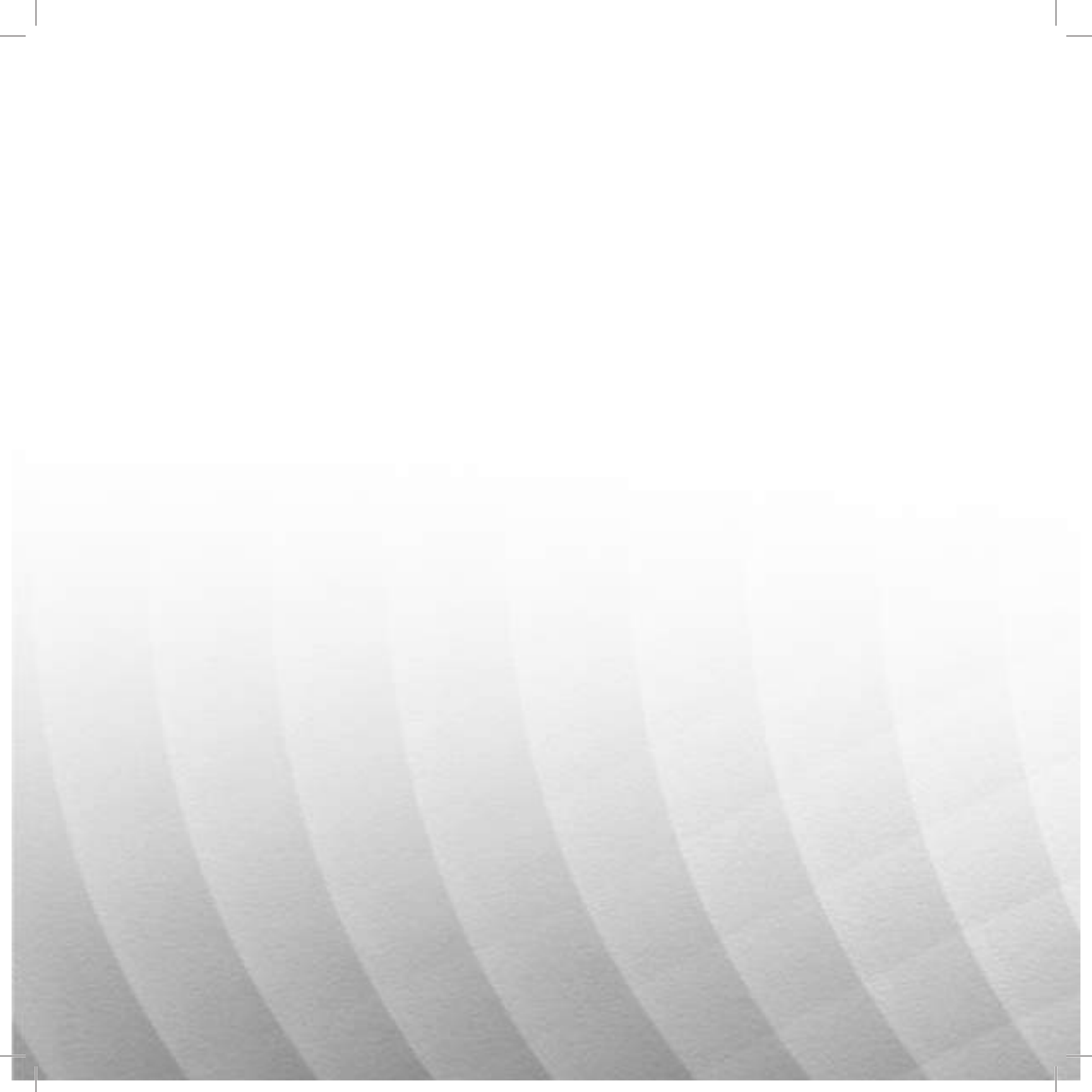


**M P O B**

**MALYSIAN PALM OIL BOARD**

Ministry of Plantation Industries and Commodities, Malaysia

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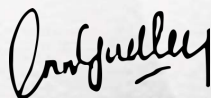


# FOREWORD

Palm oil is the most traded oil in the world. The supply of palm oil to the world's oils and fats market has been steadily increasing over the years. Palm oil has vast applications in food preparations in the home and food industry. It is therefore important to understand the nutritional benefits of this important oil.

In this regard, the Malaysian Palm Oil Board (MPOB) has taken an effort to compile and update the health facts on palm oil to reflect the knowledge obtained from current research findings, and present in a simple language for the understanding of readers.

This booklet is presented to highlight 16 important health facts of palm oil and these have been reviewed by MPOB International Advisory Panel for Nutrition (IAPN) which consists of internationally renowned nutrition and health experts.



**Datuk Dr. Choo Yuen May**  
*Director-General, MPOB*





# INTRODUCTION TO PALM OIL

Oil palm is unique, as it produces two distinct oils from a single fruit, namely: palm oil from the fruit and palm kernel oil from the seed or kernel. These two oils are different from each other.



Palm oil contains a balanced proportion of unsaturated and saturated fatty acids at about 50% each. However, in the body, it behaves more like a monounsaturated fat and has no adverse impact on cholesterol levels.

Most of the time, palm oil is consumed in the form of liquid palm olein or solid palm stearin. Palm olein has a higher amount of unsaturation and appears as a liquid form at room temperature (~25°C).

Often, consumers tend to perceive palm oil as a saturated fat. This misconception has led many to believe that palm oil is 'unhealthy' for edible uses and associated with obesity and heart diseases.

The following 16 health facts of palm oil will enlighten the reader on the nutritional attributes of palm oil to human health. These facts are based on and supported by credible research findings from reputable institutions worldwide.

## FACT 1

### PALM OIL IS NOT PALM KERNEL OIL

Palm oil is **extracted** from the **flesh** of the **palm fruit** solely by **cooking** and **pressing**. It should be clearly distinguished from palm kernel oil because it has a lower level of saturated components (Choo and Nesaretnam, 2014).

## FACT 2

### OIL PALM IS A NON-GMO CROP

Oil palm is a **non-genetically modified crop**. Oil palm is **bred through a natural process** of breeding and is **not genetically modified**.

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# **PALM OIL AND ITS APPLICATIONS**

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### FACT 3

## PALM OIL IS A RELIABLE FOOD INGREDIENT

Palm oil is one of the 17 **edible oils recognised** by the **Food and Agricultural Organization (FAO)** and the **World Health Organization (WHO)** (Codex Alimentarius Commission, 1983).

### FACT 4

## PALM OIL IS A BALANCED OIL

**Palm oil contains** an equal proportion of saturated and unsaturated fatty acids with about **44% palmitic acid**, **5% stearic acid** (both saturated), **40% oleic acid** (monounsaturated), **10% linoleic acid** and **0.4% alpha linolenic acid** (both polyunsaturated). The appreciable amounts of saturated and monounsaturated fatty acids allow palm oil to be easily fractionated into two products; **80% of liquid oil (palm olein)** and **20% of solid fat (palm stearin)** (United States Department of Agriculture, 1979).

## FACT 5

### PALMITIC ACID FROM PALM OIL IS IMPORTANT FOR EARLY CHILDHOOD DEVELOPMENT

**Palmitic acid** is one of the three fundamental **fats in breast milk**. It accounts for approximately 25% of total fats in human milk. It is the most **important fatty acid** during **early childhood development**. **Palm oil contains palmitic acid** that can be used in **infant formula** (Marangoni et al., 2000).

## FACT 6

### PALM OIL IS A STABLE OIL

Palm oil has **better oxidative stability** and is **resistant to the formation of oxidised polymers** which form the sticky substance around the kitchen stove. Therefore, palm oil should always be the **preferred choice for cooking oil** (Faur, 1975; Ong and Goh, 2002; Berger, 2005).

## FACT 7

### PALM OIL HAS MANY FUNCTIONAL PROPERTIES

**Palm oil** functions as a **good cooking oil** due to its **stability**. Palm oil is also well balanced which makes it suitable to be **made into margarines and shortenings** for use in **bakery products** (MPOB, 2009).



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# **PALM OIL AND CHOLESTEROL**

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**FACT 8**

**PALM OIL IS FREE  
FROM CHOLESTEROL**

Like all other vegetable oils, **palm oil** is **cholesterol-free** (United States Department of Agriculture, 1979).



## FACT 9

### PALM OIL DOES NOT INCREASE CHOLESTEROL

There is no adverse effect from palm oil and palmitic acid on cholesterol. On the other hand, **palm oil induces** a modest but significant **increase in good cholesterol (HDL)** (Sundram *et al.*, 1992; Sundram, 1997; French *et al.*, 2002; Sundram *et al.*, 1994).

**Both palm olein and olive oil exert similar effects** on cholesterol level in healthy volunteers (Voon *et al.*, 2011; Choudhury *et al.*, 1995; Ng *et al.*, 1992).

Palm olein diet is **less cholesterol raising** compared to lard (Zhang *et al.*, 1997a) and is comparable to peanut oil (Zhang *et al.*, 1997b; Ghafoorunissa *et al.*, 1995) and canola oil (Sundram *et al.*, 1995).

Palm oil is **beneficial in lowering lipoprotein(a)** which is associated with cardiovascular disease (Hornstra *et al.*, 1991).





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**PALM OIL IS  
*TRANS-FAT* FREE**

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## FACT 10

### **PALM OIL IS FREE FROM TRANS-FATTY ACIDS**

Having a unique and balanced composition of saturation and unsaturation, **palm oil does not require hydrogenation** for use as a fat component in foods, thus avoiding the formation of *trans*-fatty acids.

*Trans*-fatty acids have been proven to have detrimental effects on health (FAO, 2010).

Therefore, **palm oil and palm stearin** are **good alternatives** to **replace *trans*-fat** and **formulate *trans*-free food products**.

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# **PALM OIL COMPARED TO OTHER OILS**

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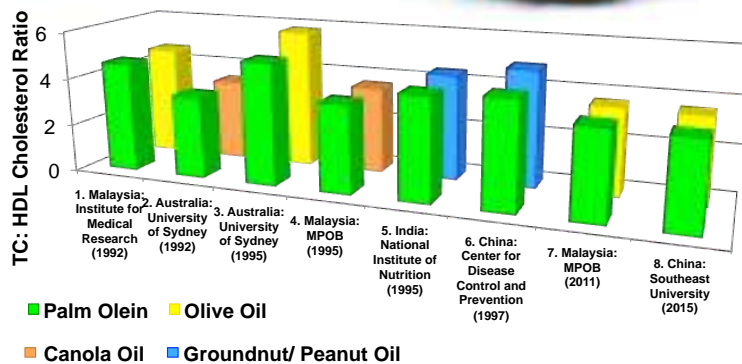
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**FACT 11**

**PALM OLEIN BEHAVES MORE LIKE A MONOUNSATURATED OIL**

Palm oil and its liquid fraction, palm olein, are as **good as soft oils** in its **cholesterolemic response** compared to other oils and fats. A number of controlled human studies worldwide have confirmed that there is **no significant rise in serum total cholesterol** when palm olein, **providing most of the dietary fat**, is used as an alternative to other fats in the habitual diet. Instead, the **level of HDL cholesterol**, regarded as **beneficial**, was **significantly enhanced** (Voon et al., 2011; Choudhury et al., 1995, Ng et al., 1992; Truswell et al., 1992; Zhang et al., 1997b; Ghafoorunissa et al., 1995; Sundram et al., 1995).



**Human Studies on Long Term Intake of Palm Olein and Unsaturated Oils**

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- 5. Ghafoorunissa et al., 1995 *Lipids*
- 6. Zhang et al., 1997b *Asia Pacific J. Clin. Nutr.*
- 7. Voon et al., 2011 *AJCN*
- 8. MPOB Unpublished Data 2015

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# **PALM OIL STRUCTURE AND CHARACTERISTICS**

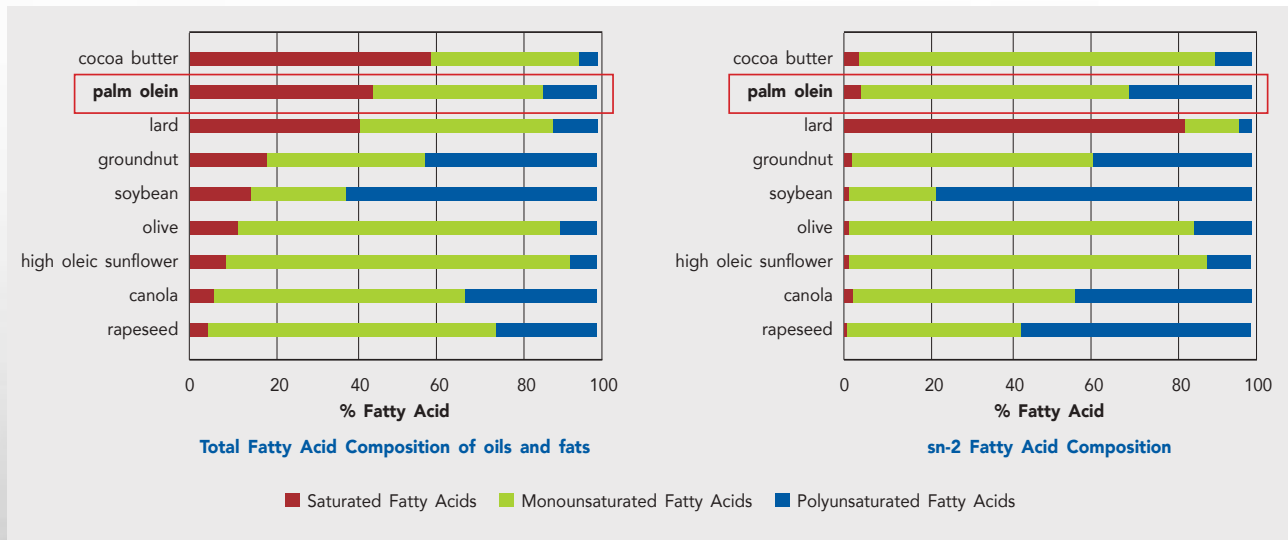
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## FACT 12

# PALM OIL HAS MORE UNSATURATED FATTY ACIDS DISTRIBUTED AT THE 2-POSITION OF TRIGLYCERIDE STRUCTURE

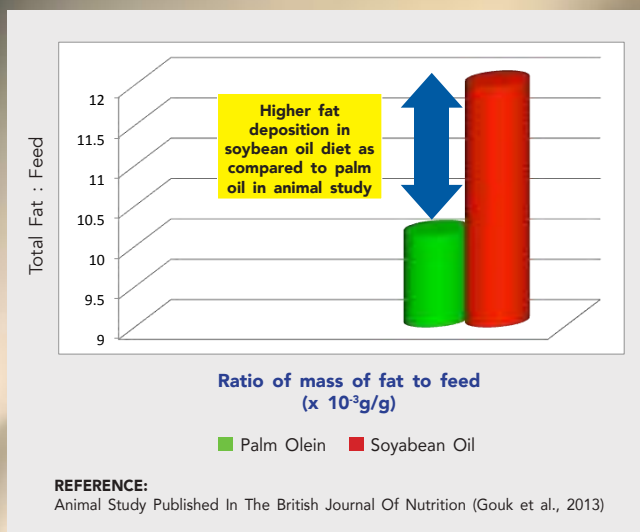
The fat molecule comprises three fatty acids esterified to a glycerol backbone. **The fatty acids at position-2** will play an **important role** in the **absorption of the fat**, whereas saturated fatty acids at positions-1 and -3 will be less absorbed.

**Palm olein contains about 87% of unsaturated fatty acid** (mainly oleic acid) in the **2-position**, although in overall it contains 50% of unsaturated fatty acids. This may explain why **palm olein behaves like monounsaturated oils** (Ong and Goh, 2002; Choudhury *et al.*, 1995; FAO, 2010; Small, 1991; Kritchevsky *et al.*, 2000).



Structure of a Palmitic-Oleic-Palmitic Triglyceride

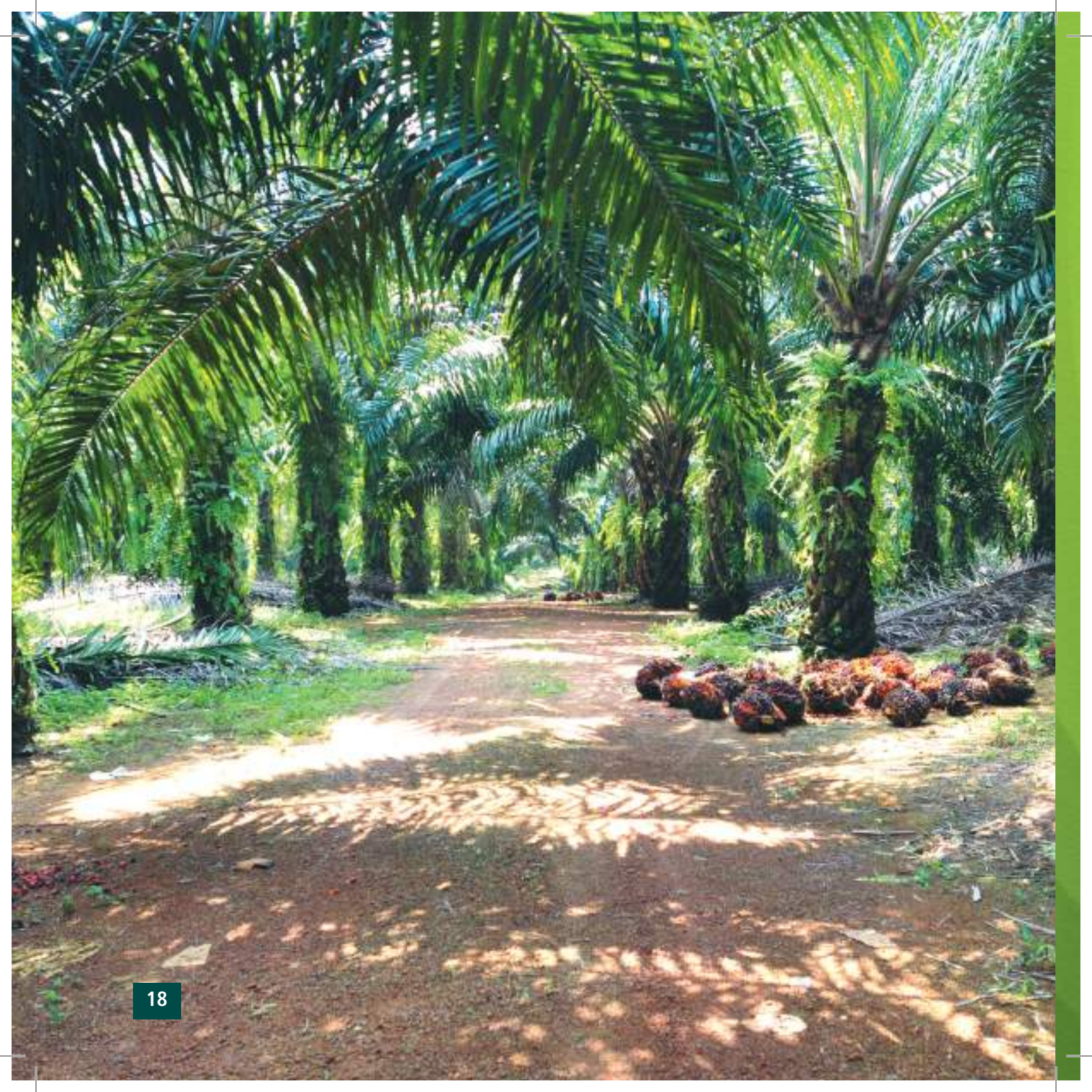




## FACT 13

### PALM OIL INDUCES LESS FAT DEPOSITION

**Recent studies** in mice indicated that **palm oil lowers fat deposition** compared to polyunsaturated fats. Studies also showed that if **long chain saturated fatty acids** (i.e. palmitic acid) **occur at 1- and 3-positions**, they tend to be **excreted from the body** and thus **reduce fat deposition** (Gouk et al., 2013; Gouk et al., 2014). These observations are currently being investigated in human trials.



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# **PALM OIL AND ITS PHYTONUTRIENTS**

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## FACT 15

### RED PALM OIL IS RICH IN CAROTENOIDS

The **carotenoids** in **red palm oil** are **biologically active** as **pro-vitamin A**. Vitamin A is an **essential nutrient** and a **powerful antioxidant**. Vitamin A deficiency can cause blindness, weaken bones, lower immunity, and adversely affects learning ability and mental function. The red palm oil has been marketed worldwide and is now commercially available (Choo, 1994; Ooi *et al.*, 1994; Nagendran *et al.*, 2000; van Stuijvenberg and Benade, 2000; Canfield *et al.*, 2001; Rice and Burns, 2010; Oguntibeju *et al.*, 2009).



## FACT 16

# OIL PALM WATER SOLUBLE PHYTONUTRIENTS REPRESENT A NEW SOURCE OF PHENOLIC ANTIOXIDANTS

The most **recent discovery** is the **water soluble phytonutrients** or the **oil palm phenolic compounds**. The oil palm phenolic compounds demonstrate a bouquet of **health promoting properties** (Sambanthamurthi *et al.*, 2011) including:

- anti-oxidant
- anti-microbial
- anti-atherogenic
- anti-cancer
- anti-diabetic
- anti-hypertensive

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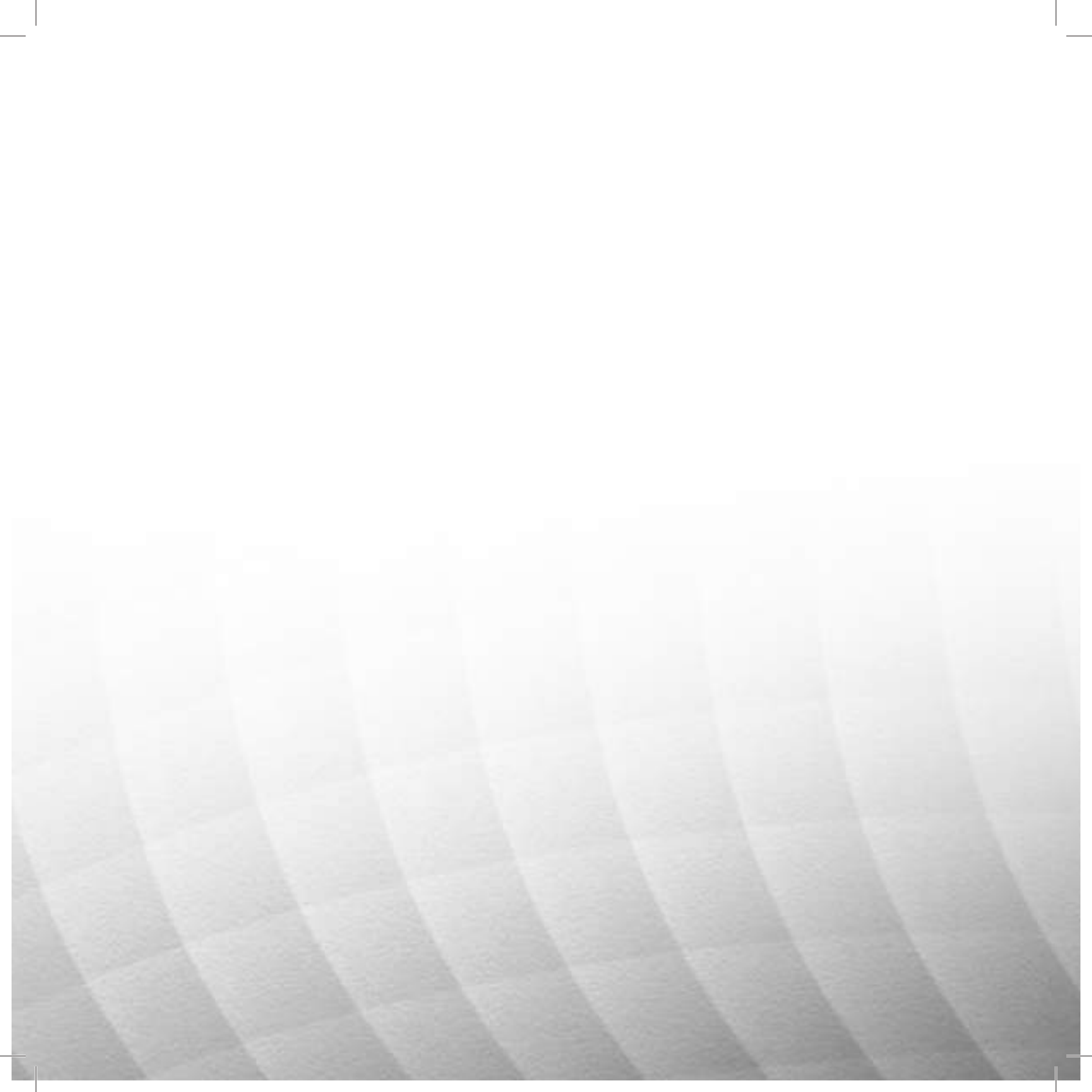
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