Malaysian Palm Oil: Excellent Ingredient for Food and Cosmetics Industries in the Philippines

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Malaysian Palm Oil Board

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Presentation outline

1. Introduction to MPOB and Malaysian Palm Oil Industry
2. MSPO – Certified palm oil as sustainable ingredient
3. Palm oil as premium and healthy oil for food applications
4. Palm oil for Cosmetics Applications
5. Conclusion
Malaysian Palm Oil Board (MPOB)

Ministry of Plantation Industries and Commodities

1 May 2000

R&D
Pioneering research and development, providing scientific and technological infrastructure

PORIM

Enforcement & Licensing
To enhance the well-being of the Malaysian oil palm industry through research, development and excellent services & enforcement

PORLA
Malaysian Palm Oil Board (MPOB)

Major Roles

• Serve the oil palm industry through R&D activities
• Enforcement & Licensing
• Provide training
• Commercialization of new technologies
• Create market access for palm oil
• Resource & Information center
World Production of Oils & Fats, 2014

200.24 mil tonnes
total world production of 17 oils & fats
Global Production of Vegetable Oils
January-March 2015

<table>
<thead>
<tr>
<th>Palm Oil</th>
<th>2014 (mil t)</th>
<th>Jan-March 2015 (mil t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Total production</td>
<td>175.65</td>
<td>62.44</td>
</tr>
<tr>
<td>• Domestic Consumption</td>
<td>173.27</td>
<td>60.73</td>
</tr>
<tr>
<td>• Total Import</td>
<td>67.94</td>
<td>43.03</td>
</tr>
<tr>
<td>• Total Export</td>
<td>70.91</td>
<td>44.60</td>
</tr>
<tr>
<td>• Ending stock</td>
<td>17.66</td>
<td>7.34</td>
</tr>
</tbody>
</table>

Source: Foreign Agriculture Services, USDA, Office of Global Analysis, March 2015
Global Palm Oil Production

62.441 mil tonnes
Total Production

- Malaysia: 33%
- Indonesia: 53%
- Others: 7%
- Thailand: 4%
- Colombia: 2%
- Nigeria: 1%

Source: Foreign Agriculture Services, USDA, Office of Global Analysis, March 2015
Major Importers of Palm Oil, 2014

- India: 8.9 million tonnes
- EU: 7.0 million tonnes
- China: 6.1 million tonnes

Source: Foreign Agriculture Services, USDA, Office of Global Analysis, March 2015
Oil Palm Planted area in Malaysia

Million hectares

Year

Source: MPOB
Crude palm oil production in Malaysia

Source: MPOB
### Export of Malaysian palm oil to The Philippines

**598,608 tonnes**
Total palm products exported to the Philippines in 2014

- **82%** or 493,700 tonnes was palm oil

<table>
<thead>
<tr>
<th>Year</th>
<th>China</th>
<th>Pakistan</th>
<th>EU</th>
<th>India</th>
<th>USA</th>
<th>Philippines</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>3,483</td>
<td>2,135</td>
<td>2,064</td>
<td>1,170</td>
<td>1,028</td>
<td>204.7</td>
<td>6,466</td>
</tr>
<tr>
<td>2011</td>
<td>3,982</td>
<td>1,821</td>
<td>2,006</td>
<td>1,668</td>
<td>1,055</td>
<td>512.2</td>
<td>7,105</td>
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<tr>
<td>2012</td>
<td>3,502</td>
<td>1,343</td>
<td>2,221</td>
<td>2,640</td>
<td>1,029</td>
<td>285.2</td>
<td>6,475</td>
</tr>
<tr>
<td>2013</td>
<td>3,699</td>
<td>1,428</td>
<td>2,331</td>
<td>2,325</td>
<td>1,012</td>
<td>206.9</td>
<td>6,971</td>
</tr>
<tr>
<td>2014</td>
<td>2,839</td>
<td>815</td>
<td>2,411</td>
<td>3,675</td>
<td>783</td>
<td>493.7</td>
<td>6,408</td>
</tr>
</tbody>
</table>

Volume in thousand tonnes
Philippines Imports of Malaysian palm products, 2014

Total 598,608 tonnes

- Palm Oil: 82%
- Oleochemicals: 12%
- Palm Kernel Oil: 2%
- Palm Kernel cake: 2%
- Finished Products: 2%
Malaysian Sustainable Palm Oil

[Images of palm oil plantation, flowers, owl, and people]
What is MSPO?

- A National standard on sustainability
  - applicable to all categories of oil palm industry covering small, medium and large plantations

- A standard that
  - that complies with Malaysian laws,
  - ratified with international agreements/ conventions to ensure that all oil palm premises in Malaysia are certified sustainable

- A Standard that is based on the pillars of sustainability
  - people, planet and profit.
The MSPO document consists of four parts:

- MSPO Part 1: General Principles for Malaysian Sustainable Palm Oil
- MSPO Part 2: Independent Small holders
- MSPO Part 3: Oil Palm Plantations and Organized Smallholders
- MSPO Part 4: Palm Oil Mills

- A government initiative
- Announced in Sept 2013
- Implemented in Jan 2015
- A dynamic scheme – continuously improved to ensure current issues on sustainability are addressed.
MSPO: Current Status

MSPO Certified Premises
(as at Aug 2015)

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<tbody>
<tr>
<td>Palm Oil Estate</td>
<td>8</td>
</tr>
<tr>
<td>Palm Oil Mill</td>
<td>6</td>
</tr>
<tr>
<td>Smallholders</td>
<td>2</td>
</tr>
<tr>
<td>New Applicants</td>
<td>25</td>
</tr>
</tbody>
</table>

Other Certification Systems

- International Sustainability and Carbon Certification (ISCC) – Germany
- Round Table on Sustainable Palm Oil (RSPO) – business-to-business arrangement

MSPO certifications are carried out by Certification Bodies (CB), now through MPOB, later the Malaysian Palm Oil Certification Council (MPOCC)
Production of CSPO under RSPO

12.65 mil tonnes total CSPO, as of June 2015

World production of CSPO, 2008-2014

World production of CSPO by country, 2014

CSPO = certified sustainable palm oil
Uses of Palm Oil

- Food
- Non-food
- Biomass (non-energy)
- Renewable Energy
Palm oil as premium and healthy oil for food applications
Fatty Acid Composition of Selected Vegetable Oils

% Fatty Acid

Olive oil  Soybean oil  Canola  Super Olein  Palm olein  Palm oil  Palm kernel oil  Coconut oil

- Saturated
- Monounsaturated
- Polyunsaturated
Abstract:
Palm oil is an excellent choice for food manufacturers because of its nutritional benefits and versatility. The oil is highly structured to contain predominantly oleic acid at sn-2 position in the major triacylglycerols to account for the beneficial effects described in numerous nutritional studies.

A.S.H. Ong and S.H. Goh
Institute of Advanced Studies, University of Malaya, Kuala Lumpur, Malaysia

Outcomes of palm oil nutrition research

- FAO and WHO have endorsed palm oil as meeting food standards under Codex Alimentarius Commission Programme

- Palm oil is healthy and safe for consumption

- Palm oil contains almost equal amounts of unsaturated and saturated fatty acids. In the body, palm oil behaves more like a monounsaturated oil and has no adverse impact on cholesterol levels.
CHAPTER 10 OF WHO REPORT: FAT AND FATTY ACID INTAKE AND METABOLIC EFFECTS IN THE HUMAN BODY

Total Cholesterol (TC) and Low Density Lipoprotein (LDL)-C raising effects of palmitic acid are lower for vegetable than animal sources because it is present predominantly in the sn-1 and sn-3 positions as opposed to sn-2 position as in animal fats such as lard.

References cited:
Ng et al. 1992 JACN;
Choudhury et al. 1995 AJCN;
Zhang et al. 1997 APJCN
Advantages of Palm Oil for Food Applications

- High Nutritional Value
- Free from Genetically Modified Organism (GMO)
- Free of Trans-Fatty Acid
- Free from Cholesterol
- Competitive Price
- High Stability
- Natural Anti-Oxidant
Food Applications of Palm Oil

• Traditional Foods
  • Cooking oil
  • Industrial Frying Fats
  • Margarine
  • Shortening
  • Vegetable Ghee
  • Confectionery Fats
  • Ice Cream
  • Filled Milk
  • Non-Dairy Food Products
    (Cheese analogue, Creamer)

• Source of pro-Vitamin A and Vitamin E
Palm Oil is the Best Frying oil

Benefits

- The unique fatty acid composition and natural antioxidants provide:
  - Good oxidative stability – long shelf life
  - High smoke point
  - Excellent thermal stability – perfect for shallow and deep frying
- Does not require hydrogenation process to increase stability
- Palm oil is trans-free
- Can be blended with local oils, providing desired properties & quality
Oxidative Stability of cooking oils: Stability of oils before frying

Source: Miskandar and Azmil (unpublished)
Oxidative stability of cooking oils: Stability of oils after 56 hours of frying

POo: Palm Olein
SFO: Sunflower Oil
CNO: Canola Oil
CSO: Cottonseed Oil

• Margarine formulations to reduce TFA (< 1%, < 2%) using blends of palm oil and soft oils
• Palm oil remains functionally desirable
Margarines usually contain 80% fat. However, MPOB palm-based low fat bakery margarine is formulated using 60% fat.

**Benefits**
- Lower fat (60%)
- Good plasticity and satisfactory baking performance comparable to a standard margarine with 80% fat content.
Other Food Applications

Palm-based ice cream
• Palm oil is suitable due to its narrow plastic range with high solid at low temperature.

Palm-based Mayonnaise and Salad Dressing

Palm-based cheese
• Palm oil and palm kernel oil fractions can substitute milk fat in cheese analogue, suitable for pizza topping.
Palm Phytonutrients

Vitamin E (Tocotrienols & Tocopherols)

Carotene from Red Palm Oil

Phytonutrients

Squalene  Lecithin  Coenzyme Q_{10}  Phytosterol

Source: Choo et al., 2008
Tocotrienols: GRAS Status from US-FDA
since April 2010
(GRAS = generally regarded as safe)

Tocotrienols can be included in foods:

• Margarines and spreads
• Designer fats and oils
• Salad dressing and Mayonnaise
• Potato chips and salty snacks
• Bakery products
• Cookies & crackers
• Ready To Eat (RTE) cereals, cereal bars, granola bars, protein bars and power bars
• Meal replacement and other functional beverage products and mixes
• Meatless meat products
Tocotrienols have been demonstrated to exhibit multifaceted activities including anti-oxidant, anti-cancer, cardio-protective and neuro-protective effects.

Palm oil is the major source of tocotrienols.

Choo et al. 2005 Lipids;
Benefits of Palm Tocotrienols

- Powerful antioxidant
- Improve cognitive function
- Immune booster
- Radioprotection
- Neuro-protection
- Cardiovascular disease prevention
- Bone protection
- Skin protection
- Cancer prevention
- Hormone regulator
- Anti-inflammatory
Carotenoids have
• Cancer inhibiting properties
• Anti-oxidant properties
• Immune-enhancement effects
• Cardiovascular protective effects
• Cataract preventive properties

Red Palm Oil is rich in natural carotenoids, which are biologically active as pro-Vitamin A.

Pro-vitamin A: Solution to vitamin A deficiency
Benefits of Palm Carotenoids

- Improves vitamin A and anti-oxidative status
- Reduces prevalence of Bitot’s spot (eye problem)

Vitamin A intervention program in Gansu, China

Vitamin A intervention program in South Africa
Palm Oil for Non-Food Applications

Palm-based Cosmetics & Personal Care Products

- Renewable active
- Environmental friendly
- Biodegradable
- Mild to skin
Palm Oil for Cosmetics Products

Palm-based cosmetics for facial creams, body lotions, lipstick, lip gloss, foundation + Vitamin E (Tocotrienols)

- Excellent marketing tool
- Premium pricing and image
Palm-based new ingredient for Cosmetics

PALM DIHYDROXYSTEARIC ACID (PALM DHSA)

Natural Triglyceride

- Fatty alcohol
- Fatty ester
- Fatty acids
- Fatty amine/amide
- Glycerol

Oleic Acid

DHSA

Using Oleic Acid from palm oil as a feedstock

\[
\text{CH}_3-(\text{CH}_2)_7-\text{CH-CH-}(\text{CH}_2)_7-\text{COOH} \quad \text{C}_{18}\text{H}_{36}\text{O}_4 \quad (\text{MW: 316.38})
\]
Palm-based Facial Mask + Vitamin E Tocotrienols

- Increase skin hydration and protect the skin from free radical (skin feels soft and radiance)
Palm oil is an important oil to the world, fulfilling the needs for calories and health; to feed the growing global population.

Palm oil has a wide range of applications in the food, cosmetics and other non-food industries,

Abundance in supply, environmental friendly & renewable and cost effective.

The Malaysian oil palm industry will continue to grow in a sustainable manner ensuring the people, planet and profit are part of the equation.

Malaysia will continue to provide a high quality and reliable supply of palm oil to meet the needs in the Philippine and the world.
Mark Your Calendar

Thank you

See you at PIPOC 2015

“Oil Palm: Powering the World, Sustaining the Future”

6 - 8 October 2015

Kuala Lumpur Convention Centre,
Kuala Lumpur, Malaysia

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