



DEVELOPMENT OF INDONESIAN FOOD INGREDIENTS INDUSTRY^{*)}

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^{*)} Presented at 50th Philippine Association of Food Technologists (PAFT) Annual Meeting, July 7 2011 at the SMC Conception Center, MOA Complex, Pasay City, Philippines

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DEVELOPMENT OF INDONESIAN FOOD INGREDIENTS INDUSTRY


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Indonesian Association of Food Technologists, President, 2006-2008 and 2008-2010.

Foods ingredients technology has advanced tremendously in response to growing and changing demand of global consumers. Not only that consumers have high expectations for safer and more affordable foods; but they also demand more on functionality, performance, convenience and, of course, superior taste. Especially; demand for developing foods for health promotion and disease prevention are critical keys for ingredient technology. This presentation will discuss several development of food ingredients industry in Indonesia; relevant to the general trend of global consumer's in international markets. Emerging ingredients, especially functional endogenous ingredients for health will be discussed.

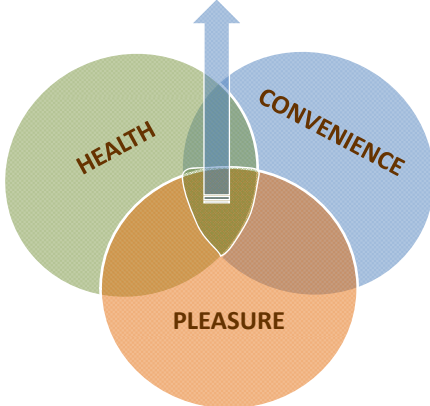
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GENERAL TRENDS

Consumers expectations for functional foods: functionality, convenience, performance and, of course, superior taste




- More information
- More evidence for claim
- More control over “food plus”, “food minus”, and “natural alternative”

- More individual (portion control)
- More control over time and quality of preparation


- More fun & entertaining
- More ethnic & exotic taste
- More premium & indulgents

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GENERAL TRENDS

Consumers expectations for functional foods: functionality, convenience, performance and, of course, superior taste



Foods that function

- Protection against...
 - Heart Disease
 - Cancer
- ↑Cognitive Function
- ↑ Digestion
- ↑ Bone Strength

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GENERAL TRENDS


*Consumers expectations for **functional foods**:
functionality, **convenience**, performance and, of course, **superior taste***



Convenient Foods :


- Fast and Simple
- “Take Out”
- Healthy
- Frozen Foods
- Restaurants
- Healthcare

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GENERAL TRENDS

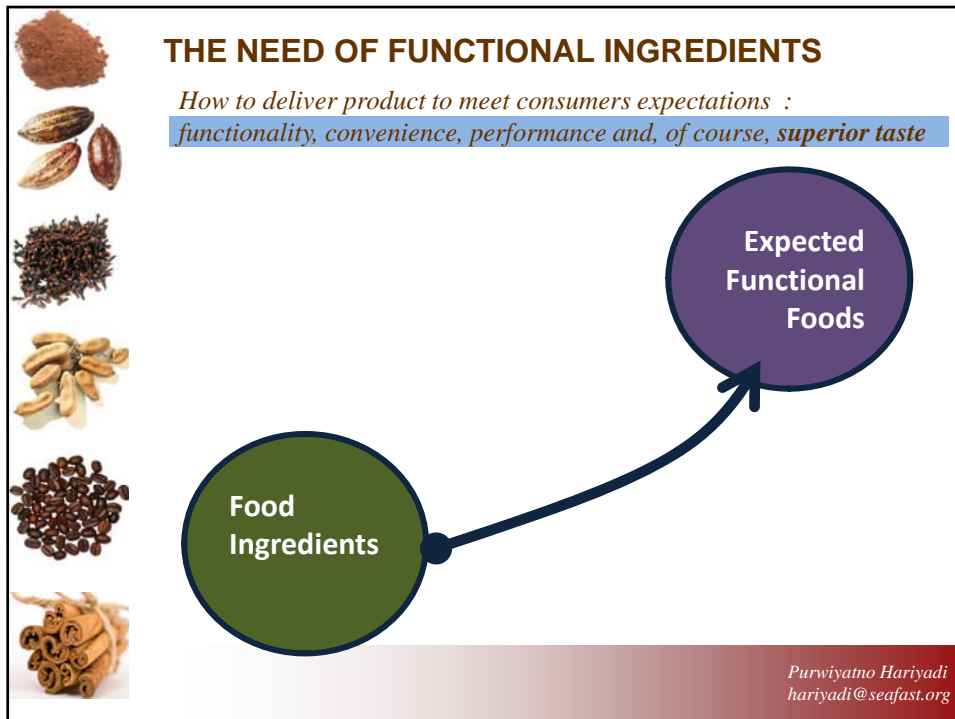
*Consumers expectations for **functional foods**:
functionality, convenience, **performance** and, of course, **superior taste***



Foods that perform :
→ Super foods?

- Foods with health benefits
- 2 for 1
- Omega-3 Fatty Acids
- Antioxidants
- Probiotics

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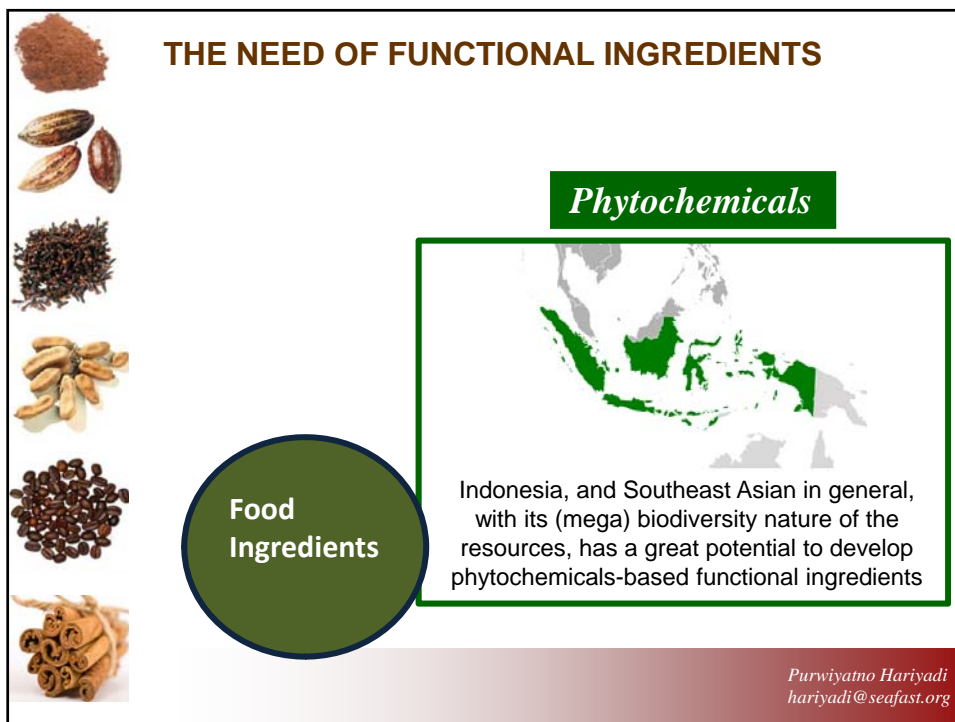
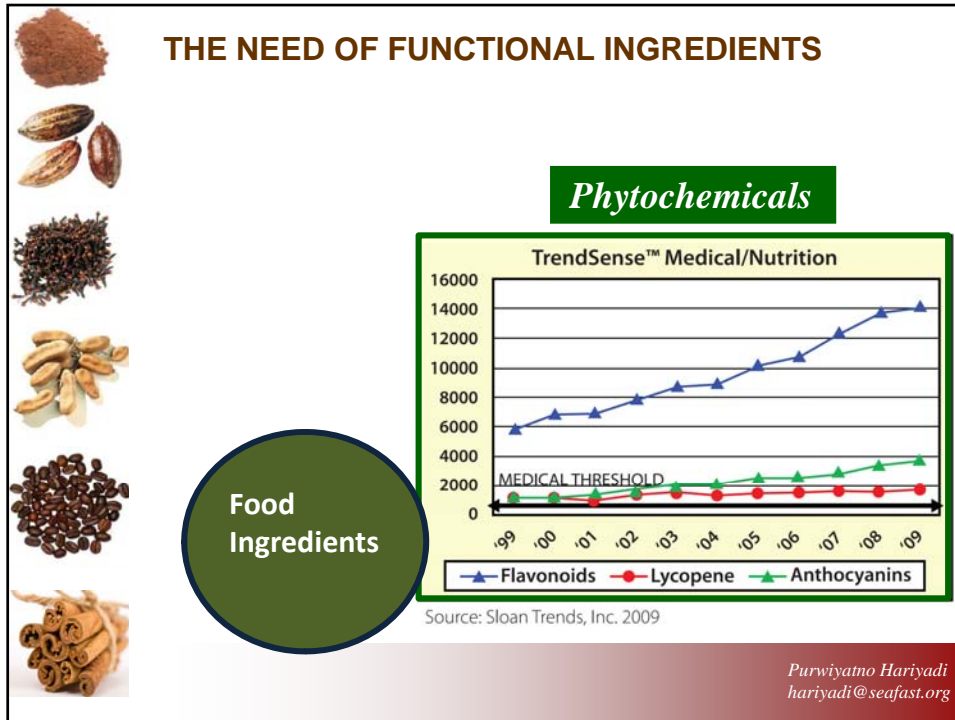
THE NEED OF FUNCTIONAL INGREDIENTS

Food Ingredients

Phytochemicals

- Etc
- **Ingredients for weight management**
- **Ingredients for diabetes**
- **Ingredients for joint health**
- **Ingredients for bone health**
- **Ingredients for performance (sport)**
- **Ingredients for eye health**
- **Ingredients for digestive health**
- **Ingredients for cardiovascular health**

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THE NEED OF FUNCTIONAL INGREDIENTS

1 Tocotrienols

Potential local resource :

- Tocotrienols comprise one half of the vitamin E family that includes the better-known tocopherols, and can be found in various foods, most prominently in rice bran and palm oil.

Oil/Fat	Tocopherols (ppm)	Tocotrienols (ppm)
Lard	~10	~10
Palm Kernel Oil	~10	~10
Coconut Oil	~10	~10
Olive Oil	~10	~10
Cocoa Butter	~150	~10
Peanut Oil	~350	~10
Sunflower Oil	~550	~10
Cottonseed Oil	~750	~10
Corn Oil	~750	~10
Safflower Oil	~800	~10
Soyabean Oil	~900	~10
Palm Oil	~650	~500

*Ref: H.T. Slover, Lipids 6:291(1971)
F.D. Gunstone (1986)*

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THE NEED OF FUNCTIONAL INGREDIENTS

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THE NEED OF FUNCTIONAL INGREDIENTS

2 Carotenoids

enhance immunity and protects against toxins, colds, flu and infections

prevent skin disorders, used as an oral sun protectant

Carotenoids

natural compounds in food, cosmetic and pharmaceutical

responsible for reducing the harmful effects of free radicals

prevent night blindness and other eye

anti-cancer properties for certain types of cancers

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THE NEED OF FUNCTIONAL INGREDIENTS

2 Carotenoids


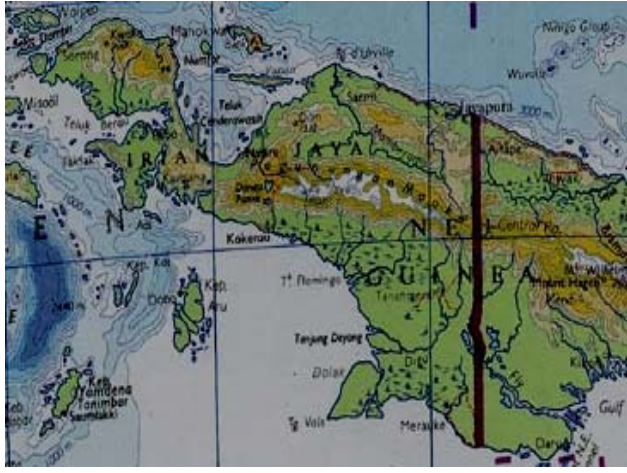
Materials	µg RE/100 g EP
Oranges	21
Bananas	50
Tomatoes	130
Carrots	400
CPO	6000-7000
Red Fruit (<i>Pandanus conoideus</i>)	99000 - 123000
Oil	

Potential local resource :

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THE NEED OF FUNCTIONAL INGREDIENTS

2a Red Fruit (*Pandanus conoideus*) Oil?

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THE NEED OF FUNCTIONAL INGREDIENTS

2a Red Fruit (*Pandanus conoideus*) Oil?

Part of Fruits	EXTRACTS		
	Traditional Method (%)	Method 1 (%)	Method 2 (%)
Pit	28,25	28,33	28,37
Seed	47,59	47,94	48,00
Pomace	3,16	3,73	5,63
Oil	21,00	20,00	18,00
Total	100	100	100

Andarwulan, N., Palupi, N.S and Susanti (2010)
 Pengembangan Metode Ekstraksi dan Karakterisasi Ekstrak Buah Merah (*Pandanus conoideus* Lam.)

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THE NEED OF FUNCTIONAL INGREDIENTS

2a Red Fruit (*Pandanus conoideus*) Oil?

Extract	Total Carotene (ppm)	β -carotene (ppm)	Total tocoferol (ppm)	α -tocoferol (ppm)
Fresh Fruit	55.000	9.185	42.009	3.685
EXTRACTS				
Traditional Method	10.022	1.852	5.033	425
Method 1	12.427	2.000	9.200	800
Method 2	21.430	4.583	10.832	1.368

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THE NEED OF FUNCTIONAL INGREDIENTS

2a Red Fruit (*Pandanus conoideus*) Oil?

Composition of Fatty Acids	Extracts		
	Traditional Method	Method 1	Method 2
C10:10	0.01	0.03	0.03
C12:0	0.25	0.25	0.45
C14:0	0.14	0.17	0.28
C15:0	0.20	0.30	0.50
C16:0	23.70	22.00	19.10
C18:0	0.72	1.80	3.15
C18:1	79.50	77.90	74.60
C18:2	4.50	5.80	9.20
C18:3	3.20	7.80	8.70
C20:1	0.16	0.17	0.81

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THE NEED OF FUNCTIONAL INGREDIENTS

2a Red Fruit (*Pandanus conoideus*) Oil?




RED FRUIT OIL





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THE NEED OF FUNCTIONAL INGREDIENTS

3a Ingredients from exotic produce :
Pomegranate → Latin means “apple with many seeds.”

- A natural product that is receiving increased attention for its potential role in helping to maintain cardiovascular health is the pomegranate
- Pomegranates contain a wide array of beneficial polyphenolic compounds including anthocyanins, catechins, tannins, and ellagic and gallic acids

Molecular Structure of Ellagic Acid



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3_b Ingredients from exotic produce : Mangosteen





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3_c Ingredients from exotic produce : Morinda Citrifolia or Noni Fruit





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THE NEED OF FUNCTIONAL INGREDIENTS

3c **Ingredients from exotic produce :**
Morinda Citrifolia or Noni Fruit




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3d **Ingredients from exotic produce :**
Aloe Vera






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4 Ingredients from exotic produce : *Natural Extracts*

- Natural extracts are created by treating a natural raw material such as clove, cocoa, or coffee with solvent.
- The extract is concentrated by the partial or total evaporation of the solvent, which produces a specific flavor profile.



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THE NEED OF FUNCTIONAL INGREDIENTS

4_a Ingredients from exotic produce : *Natural Extracts – Cacao Extracts*

- Indonesia is one of the world's largest producers of cacao. In 2009, the country's production of cacao beans totaled 849,875 tons.
- Indonesia exports most of its production of cacao beans as cacao processing industry has not expanded in the country.
- In March 2010, the government announced a regulation slapping export tax on cacao beans to encourage development of cacao processing industry in the country.
- The government also has announced a new policy to adopt an Indonesian National Standard (SNI) for cacao beans and powdered cacao this year.
- Cacao products include cacao beans, shell and cacao waste, cacao paste, cacao fat and cacao powder listed in the tariff codes of HS 1801.00.00.00 to HS 1505.00.00.00.

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THE NEED OF FUNCTIONAL INGREDIENTS

4_a **Ingredients from exotic produce :**
Natural Extracts – Cacao Extracts

Uses
Cocoa extract is widely used in both alcoholic and non-alcoholic beverages, frozen dairy desserts, candies, baked goods, and some other applications.



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THE NEED OF FUNCTIONAL INGREDIENTS

4_b **Ingredients from exotic produce :**
Natural Extracts – Coffee Extracts



Sources
Coffee Extract is the natural extract of roasted beans (seeds) of Coffee a species (*Rubiaceae*).

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THE NEED OF FUNCTIONAL INGREDIENTS

4_b **Ingredients from exotic produce :**
Natural Extracts – Coffee Extracts





Uses
 Coffee extract is widely used as a flavor ingredient in many food products, including alcoholic and non-alcoholic beverages, frozen dairy desserts, candy, baked goods, puddings, sweet sauces, and milk products.

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4_c **Ingredients from exotic produce :**
Natural Extracts – Vanilla Extracts






Sources

- Vanilla is an Orchid And still one of most expensive spices
- eferred to as "Green Gold" & "Prince of Spices"
- The main species harvested for [vanillin](#) is *Vanilla planifolia*.


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THE NEED OF FUNCTIONAL INGREDIENTS

4_c **Ingredients from exotic produce :**
Natural Extracts – Vanilla Extracts


O=Cc1cc(OC)c(O)cc1



Uses




- Vanillin is widely used in the production of chocolates, cookies, bakery products, ice creams, perfumes, agarbathies, drugs, chewing gum and milk.
- It is also widely employed in many perfumes where its strong pleasant aroma is greatly appreciated.

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4_d **Ingredients from exotic produce :**
Natural Extracts – Tea Extracts

Sources

The natural source of Green Tea is *Camellia sinensis* (*Theaceae* family), a tree that resembles an evergreen shrub, which can grow to 30 feet in height, with dark green leaves and intermittent white flowers.

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THE NEED OF FUNCTIONAL INGREDIENTS

4_d **Ingredients from exotic produce :**
Natural Extracts – Tea Extracts



Uses
Green tea extract is widely used in both medicine and industrial beverages. The healthful properties of green tea are largely attributed to polyphenols, an active ingredient that offers antioxidant and anti aging.

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4_d **Ingredients from exotic produce :**
Natural Extracts – Tea Extracts




01/01/2005

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4^e **Ingredients from exotic produce :**
Natural Extracts – Tamarind Extracts



Sources
Tamarind Extract is the natural extract of the ripe fruits (pods) of *Tamarindusindica L. (Leguminosae)*, an evergreen tree with large trunk and dark grey bark.

Uses

- Tamarind fruit is widely used in Asia as an ingredient in chutneys and curries and in pickling fish.
- It is also extensively used in making a refreshing drink. Tamarind extract is used in alcoholic and non-alcoholic beverages, frozen dairy desserts, candy, baked goods, gelatines and puddings, gravies and sauces.

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5 **Essential Oil**

Essential oils are the volatile oils obtained through distillation of the botanical parts of plants such as leaves, flowers, seeds, or bark.

- Advanced methods such as fractionation or short path (molecular) distillation are used in the redistilling process of these oils.



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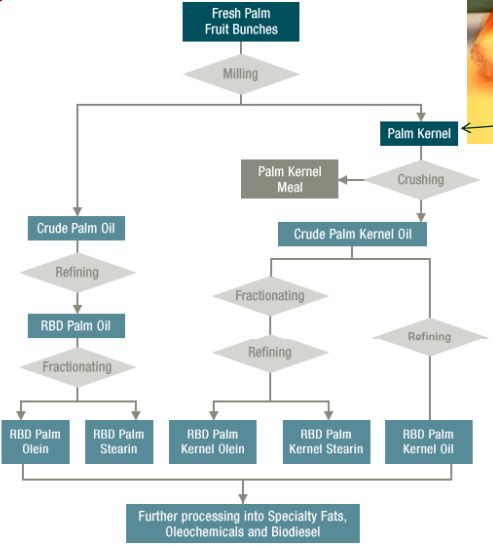
6 Palm-based Specialties Fats




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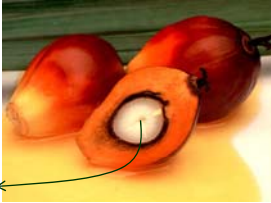
THE NEED OF FUNCTIONAL INGREDIENTS

6 Palm-based Specialties Fats

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    graph TD
      A[Fresh Palm Fruit Bunches] --> B[Milling]
      B --> C[Crude Palm Oil]
      B --> D[Palm Kernel]
      C --> E[Refining]
      E --> F[RBD Palm Oil]
      F --> G[Fractionating]
      G --> H[RBD Palm Olein]
      G --> I[RBD Palm Stearin]
      D --> J[Crushing]
      J --> K[Palm Kernel Meal]
      J --> L[Crude Palm Kernel Oil]
      L --> M[Fractionating]
      M --> N[RBD Palm Kernel Olein]
      M --> O[RBD Palm Kernel Stearin]
      L --> P[Refining]
      P --> Q[RBD Palm Kernel Oil]
      H --> R[Further processing into Specialty Fats, Oleochemicals and Biodiesel]
      I --> R
      N --> R
      O --> R
      Q --> R
  
```



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THE NEED OF FUNCTIONAL INGREDIENTS


6 Palm-based Specialties Fats

Fats with special properties for special purpose/applications.

Cocoa Butter Alternatives (CBA) ?

- Fats to meet various requirements in the chocolate and cocoa confectionery industries ([CBS](#), [CBX](#), and [CBE](#)).
- Such specialty fats to replace cocoa butter completely or partially, specialty fats for confectionery coating, filling, molding and specialty fats for ice cream.

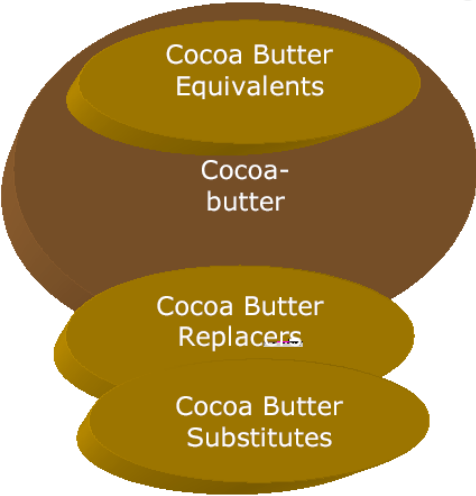
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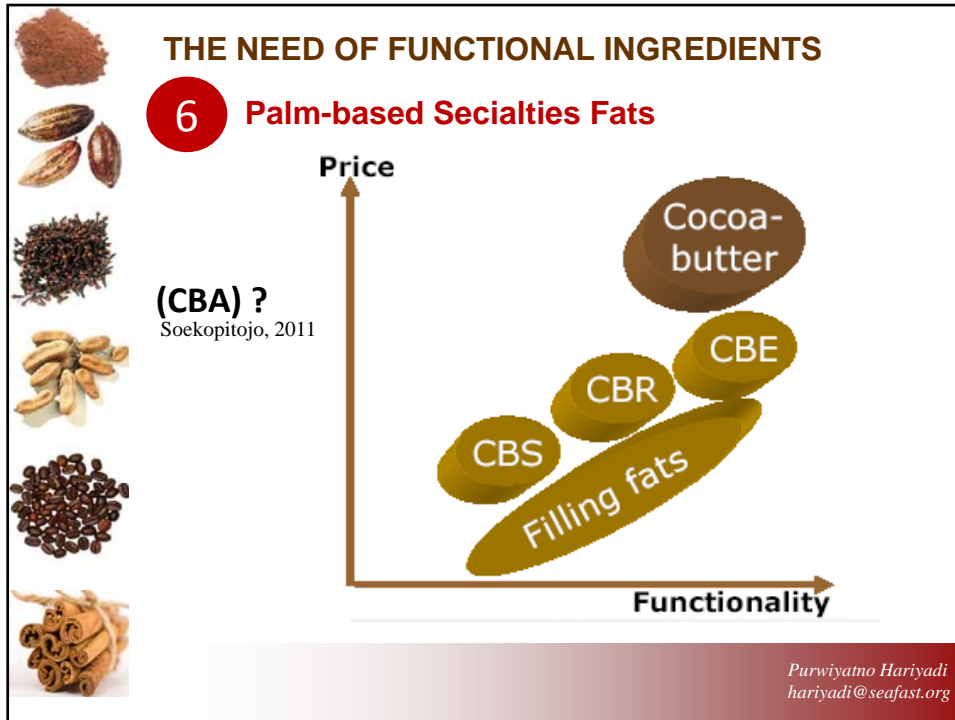
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6 Palm-based Specialties Fats

(CBA) ?
Soekopitojo, 2011



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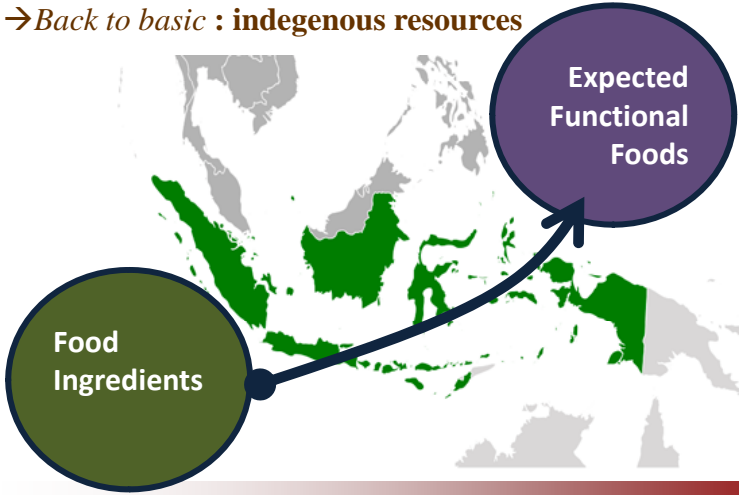




AFTER THOUGHT :

Indonesia (Asia) has a great protential to play important role in the development of modern food industry :

→Back to basic : indegenous resources



Food Ingredients

Expected Functional Foods

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THANK YOU

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