



PENDAHULUAN

PENGERTIAN MINYAK NABATI
KOMPONEN MINYAK NABATI
SUMBER-SUMBER MINYAK NABATI

BERBAGAI JENIS MINYAK



Minyak Nabati



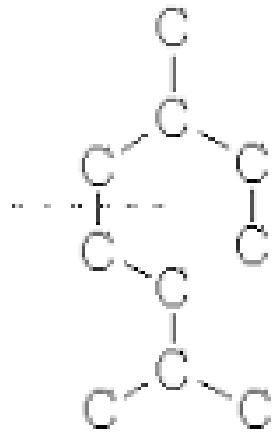
Minyak Atsiri



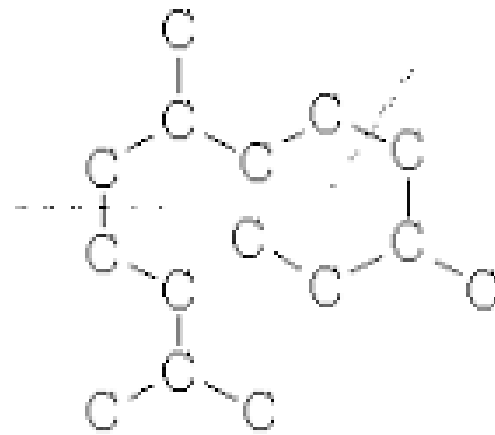
Minyak Bumi

KOMPOSISI KIMIA MINYAK ATSIRI (ESSENTIAL OIL)

1. Terpene/terpenoids

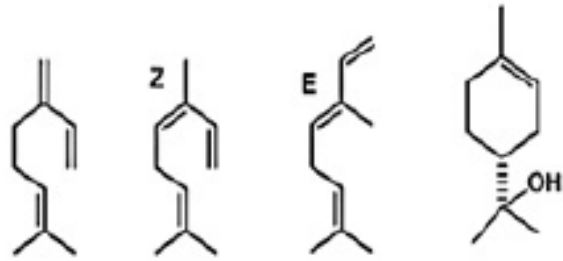


monoterpenes

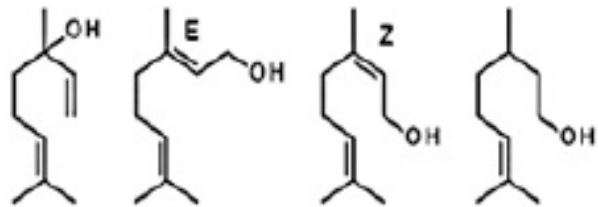


sesquiterpenes

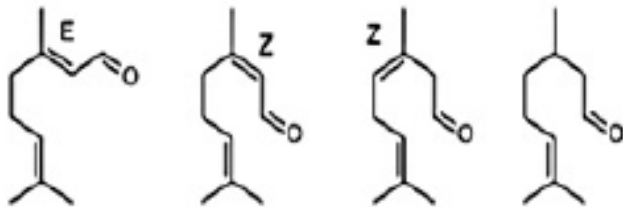




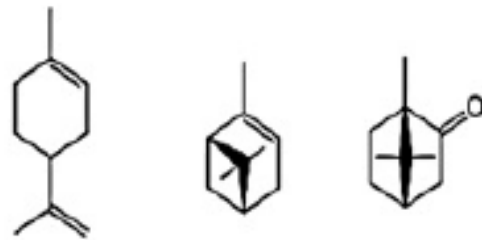
myrcene Z- β -ocimene E- β -ocimene terpineol



linalool geraniol nerol citronellol

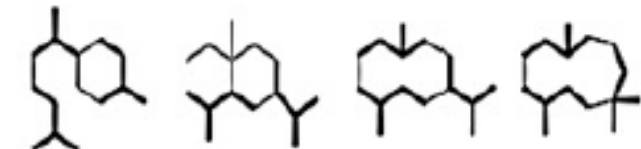


geranial (E-citral) neral (Z-citral) Z-isocitral citronellal

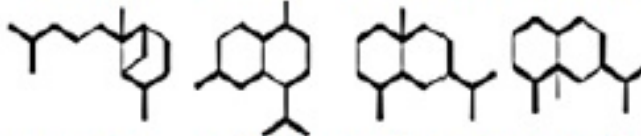


limonene α -pinene camphor

Monoterpenes

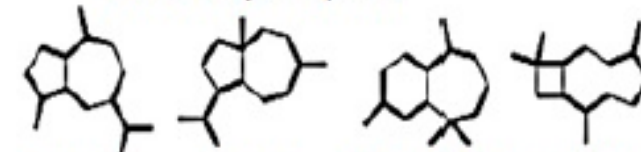


bisabolane elemene germacrane humulane

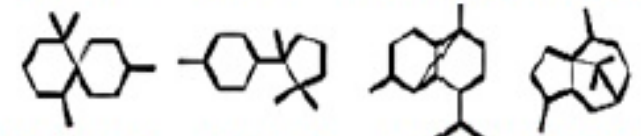


bergamotane cadinane eudesmane eremophilane

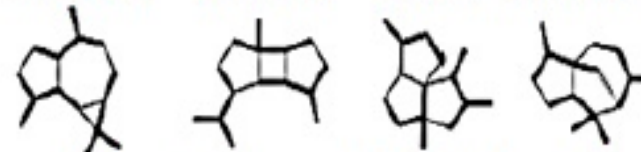
muurolane, amorphane



guaiane daucane himalachane caryophyllane



chamigrane cupranane copaane patchoulane



aromadendrane bourbonane silphiperfolane cedreane



seychellane

Sesquiterpenes

KOMPOSISI KIMIA MINYAK ATSIRI (ESSENTIAL OIL)



2. Senyawa HK rantai lurus HK C15 - C35 :

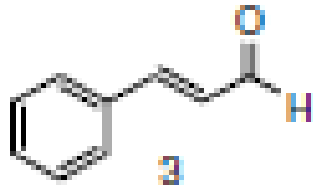
- ❖ alkohol
- ❖ aldehid
- ❖ eter
- ❖ keton
- ❖ ester
- ❖ asam
- ❖ fraksi bertitik didih rendah

KOMPOSISI KIMIA MINYAK ATSIRI (ESSENTIAL OIL)



3. NON TERPENIC (TURUNAN BENZENA) : EUGENOL, CYNAMALDEHYDE, SAFFROLE, VANILIN

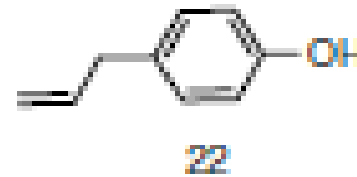
Aldehyde
Cinnamaldehyde



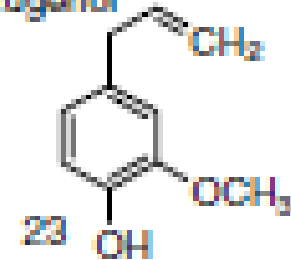
Alkohol
Cinnamyl alkohol



Phenol
Chavicol



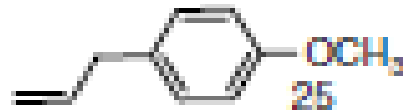
Phenol
Eugenol



Methoxy derivatives
Anethol



Methoxy derivatives
Estragola



Methylene dioxy compound
Saffrole

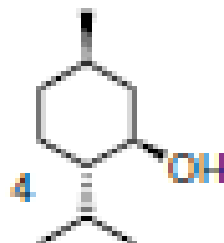


Terpenoides (Isoprenoides)

Ascaridole



Menthol



KOMPOSISI KIMIA MINYAK BUMI (PETROLEUM)



- ▶ Senyawa hidrokarbon :
 - paraffin (HK alifatis jenuh) → heksan, pentan
 - olefin (HK alifatis tak jenuh) → etilen, propilen
 - naften (HK siklis jenuh) → sikloheksan, siklopentan
 - aromat (HK siklis tak jenuh) → naftalen, antrasen
- ▶ Senyawa non HK (garam, air, S, O, N dan logam)

KOMPOSISI KIMIA MINYAK NABATI (VEGETABLE OIL)

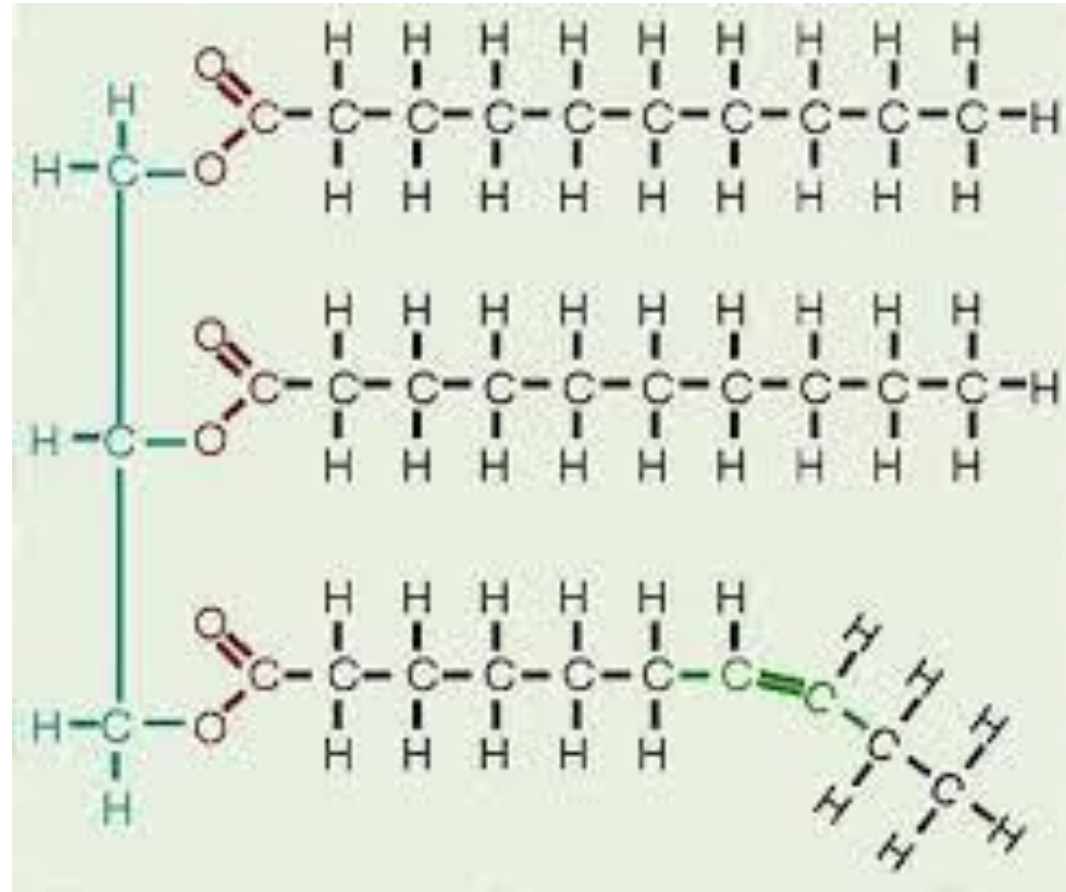


- ✿ trigliserida
- ✿ lipid kompleks
- ✿ sterol
- ✿ FFA
- ✿ pigmen
- ✿ senyawa HK tak jenuh
- ✿ lilin

KOMPONEN MINYAK NABATI



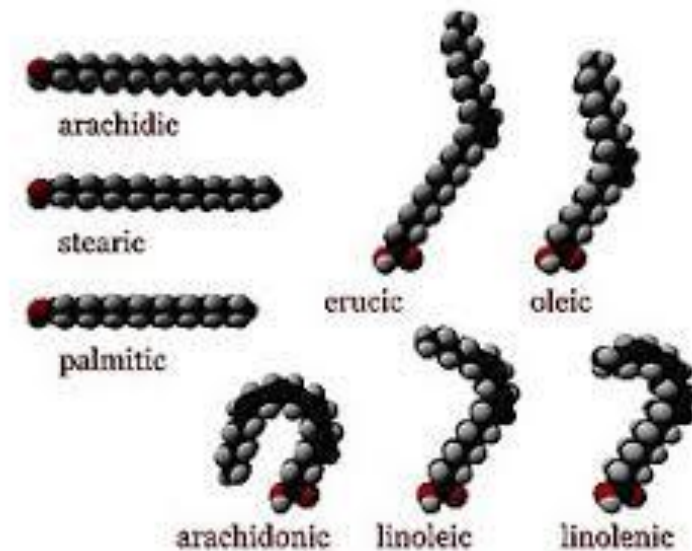
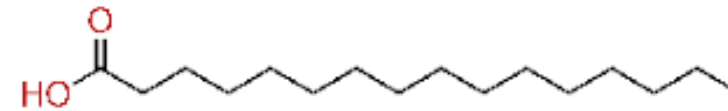
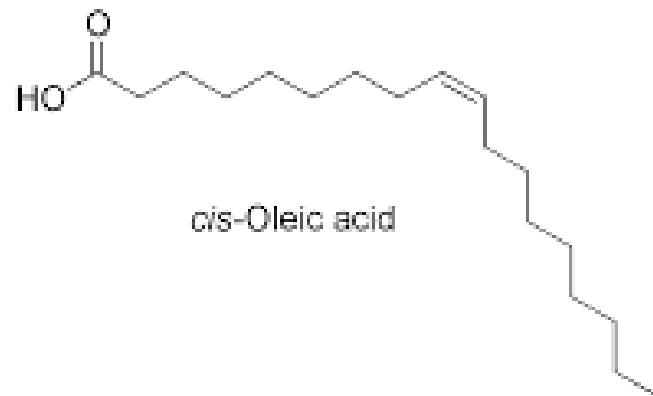
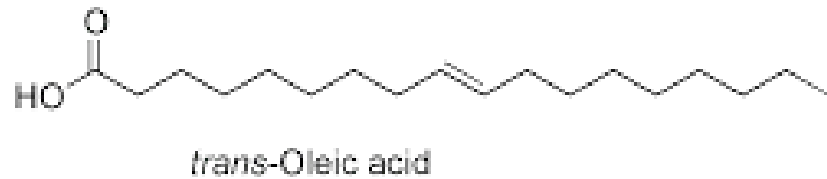
► TRIGLISERIDA

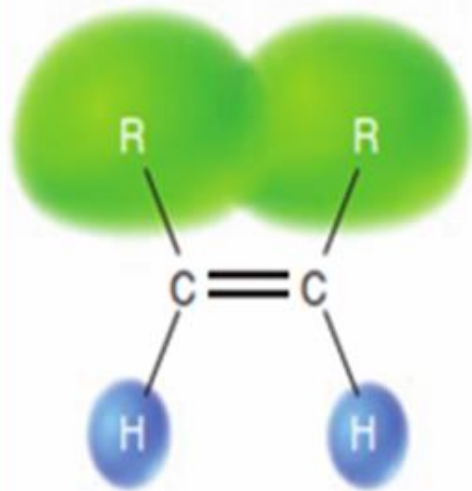
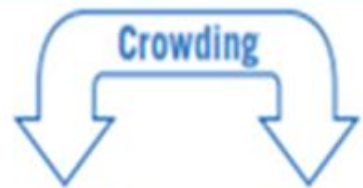


KOMPONEN MINYAK NABATI

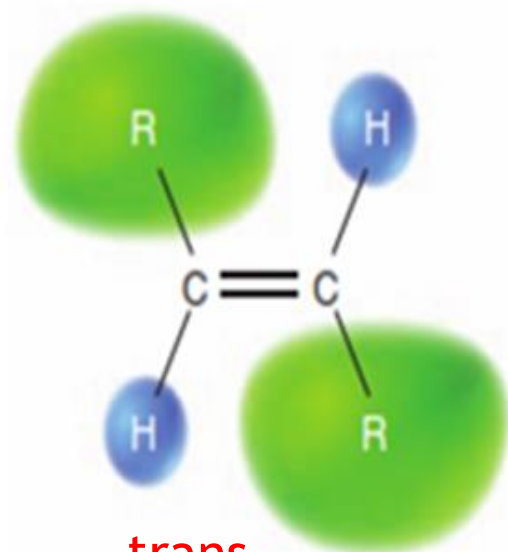


► Free Fatty Acids (FFA)



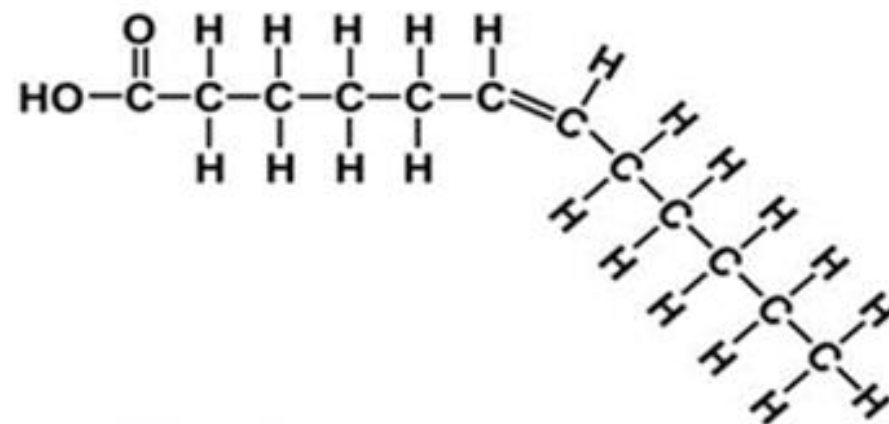


cis-

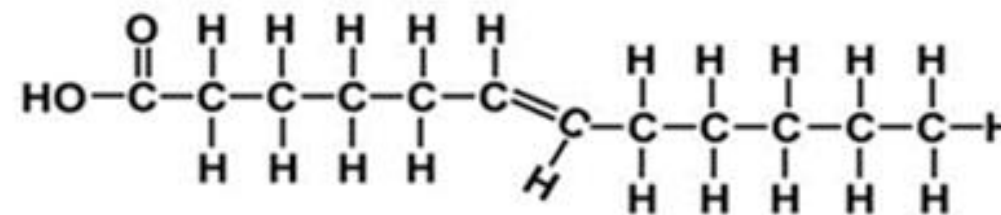


trans-

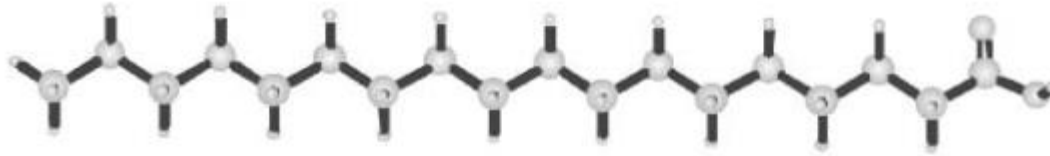
cis-fatty acid



trans-fatty acid

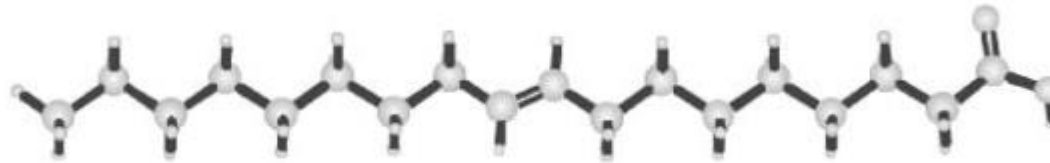


Asam stearat



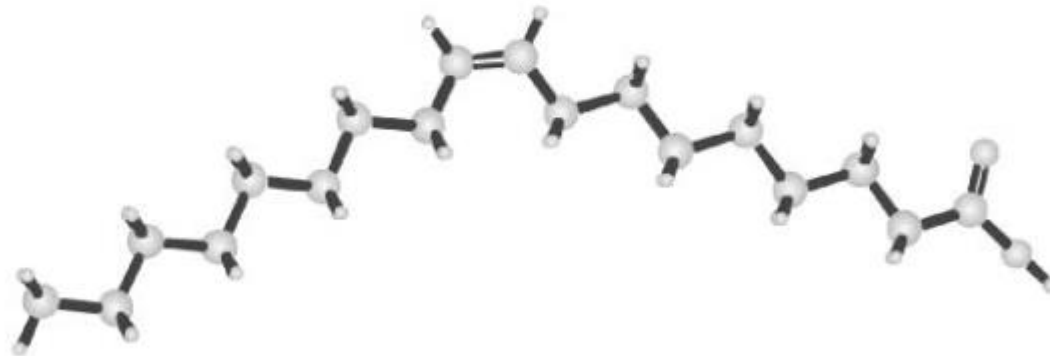
(a)

Asam elaidat



(b)

Asam oleat



(c)

Melting point ($^{\circ}\text{C}$)

69

45

13



Figure 1. "Ball and stick" models of (a) stearic acid, 18:0; (b) elaidic acid, 18:1 9t; and (c) oleic acid 18:1 9c. All three lie flat in the plane of the paper. The cis double bond causes a distinct kink in the alkyl chain of oleic acid.

TABLE 1. Fatty Acids in Commodity Oils and Fats. (a) Nomenclature and Structure.

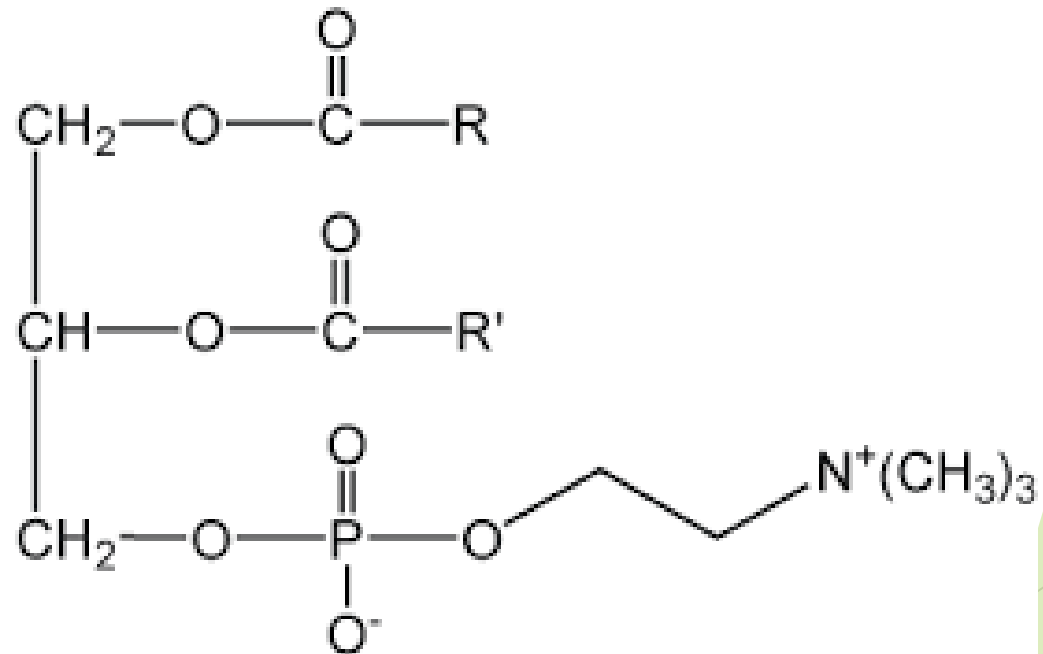
Fatty acid	Common name	Formula	Chain length
4:0	butyric	$\text{CH}_3(\text{CH}_2)_2\text{CO}_2\text{H}$	short
6:0	caproic	$\text{CH}_3(\text{CH}_2)_4\text{CO}_2\text{H}$	short
8:0	caprylic	$\text{CH}_3(\text{CH}_2)_6\text{CO}_2\text{H}$	short/medium
10:0	capric	$\text{CH}_3(\text{CH}_2)_8\text{CO}_2\text{H}$	medium
12:0	lauric	$\text{CH}_3(\text{CH}_2)_{10}\text{CO}_2\text{H}$	medium
14:0	myristic	$\text{CH}_3(\text{CH}_2)_{12}\text{CO}_2\text{H}$	medium
16:0	palmitic	$\text{CH}_3(\text{CH}_2)_{14}\text{CO}_2\text{H}$	
18:0	stearic	$\text{CH}_3(\text{CH}_2)_{16}\text{CO}_2\text{H}$	
18:1 9c	oleic	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CO}_2\text{H}$	
18:2 9c12c	linoleic	$\text{CH}_3(\text{CH}_2)_4(\text{CH}=\text{CHCH}_2)_2(\text{CH}_2)_6\text{CO}_2\text{H}$	
18:3 9c12c15c	α -linolenic	$\text{CH}_3\text{CH}_2(\text{CH}=\text{CHCH}_2)_3(\text{CH}_2)_6\text{CO}_2\text{H}$	
22:1 13c	erucic	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_{11}\text{CO}_2\text{H}$	long
20:5 5c 8c11c14c17c	EPA*	$\text{CH}_3\text{CH}_2(\text{CH}=\text{CHCH}_2)_5(\text{CH}_2)_2\text{CO}_2\text{H}$	long
22:6 4c7c10c13c16c19c	DHA*	$\text{CH}_3\text{CH}_2(\text{CH}=\text{CHCH}_2)_6\text{CH}_2\text{CO}_2\text{H}$	long

*Abbreviations of the systematic names eicosapentaenoic acid and docosahexaenoic acid.

KOMPONEN MINYAK NABATI



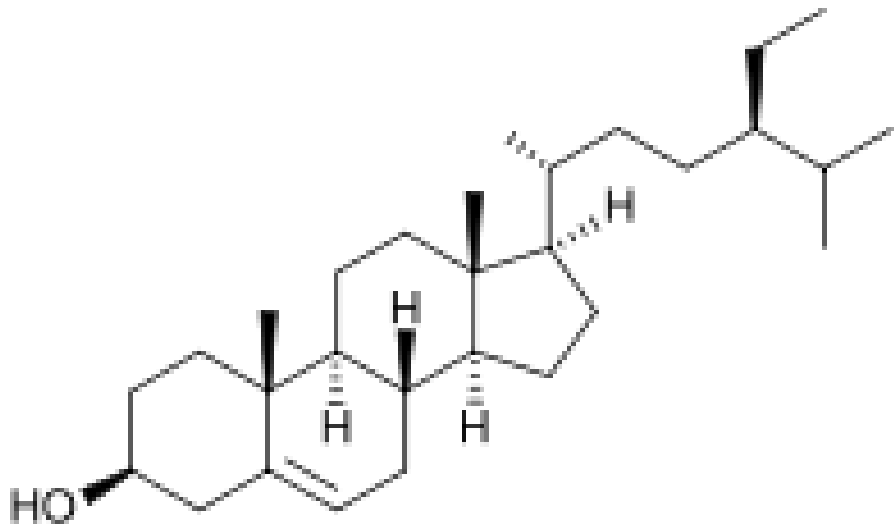
- ▶ Lipid kompleks (lecithin)



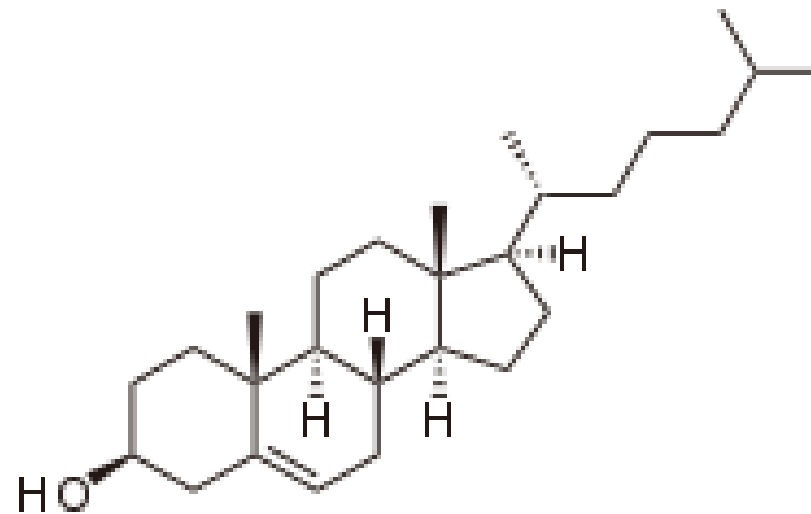
KOMPONEN MINYAK NABATI



Phytosterol



Cholesterol



KOMPONEN MINYAK NABATI

▶ PIGMEN

▶ Karoten, xanthofil, klorofil, anthocyan

▶ SENYAWA HK TAK JENUH

▶ Squalane (C₃₀H₅₀)

▶ LILIN

mirisil isobehenat →

C₂₁H₄₃COOC₁₄H₂₉

mirisil lignoserat →

C₂₃H₄₇COOC₃₀H₆₁

setil ligoserat →

C₂₃H₄₇COOC₁₆H₃₃

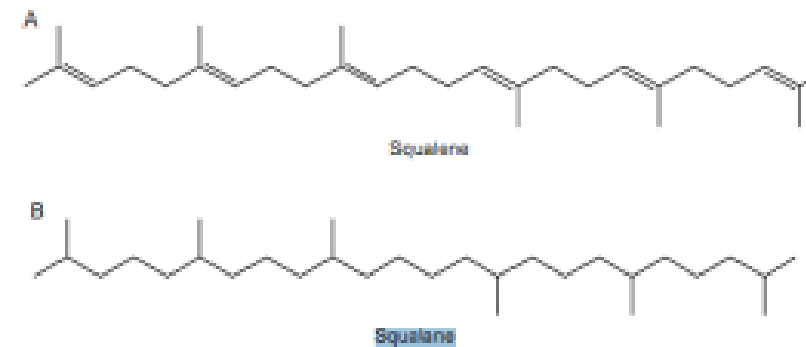


FIGURE 14.1 Chemical structures of squalene (A) and squalane (B).

Sumber asam lemak



Fatty Acid	Significant Sources
4:0	butter, dairy fats
6:0	(coconut, palm kernel)
8:0	(coconut, palm kernel)
10:0	(coconut, palm kernel)
12:0	coconut, palm kernel
14:0	coconut, palm kernel
16:0	cottonseed, palm
18:0	cocoa butter, tallow
18:1 9c	cottonseed, olive, palm, rape
18:2 9c12c	corn, sesame, soybean, sunflower
18:3 9c12c15c	linseed
20:1 13c	high erucic rape
20:5 5c8c11c14c17c	fish and animal fats
22:6 4c7c10c13c16c19c	fish and animal fats