Disciplina: SLC0673

Lípides

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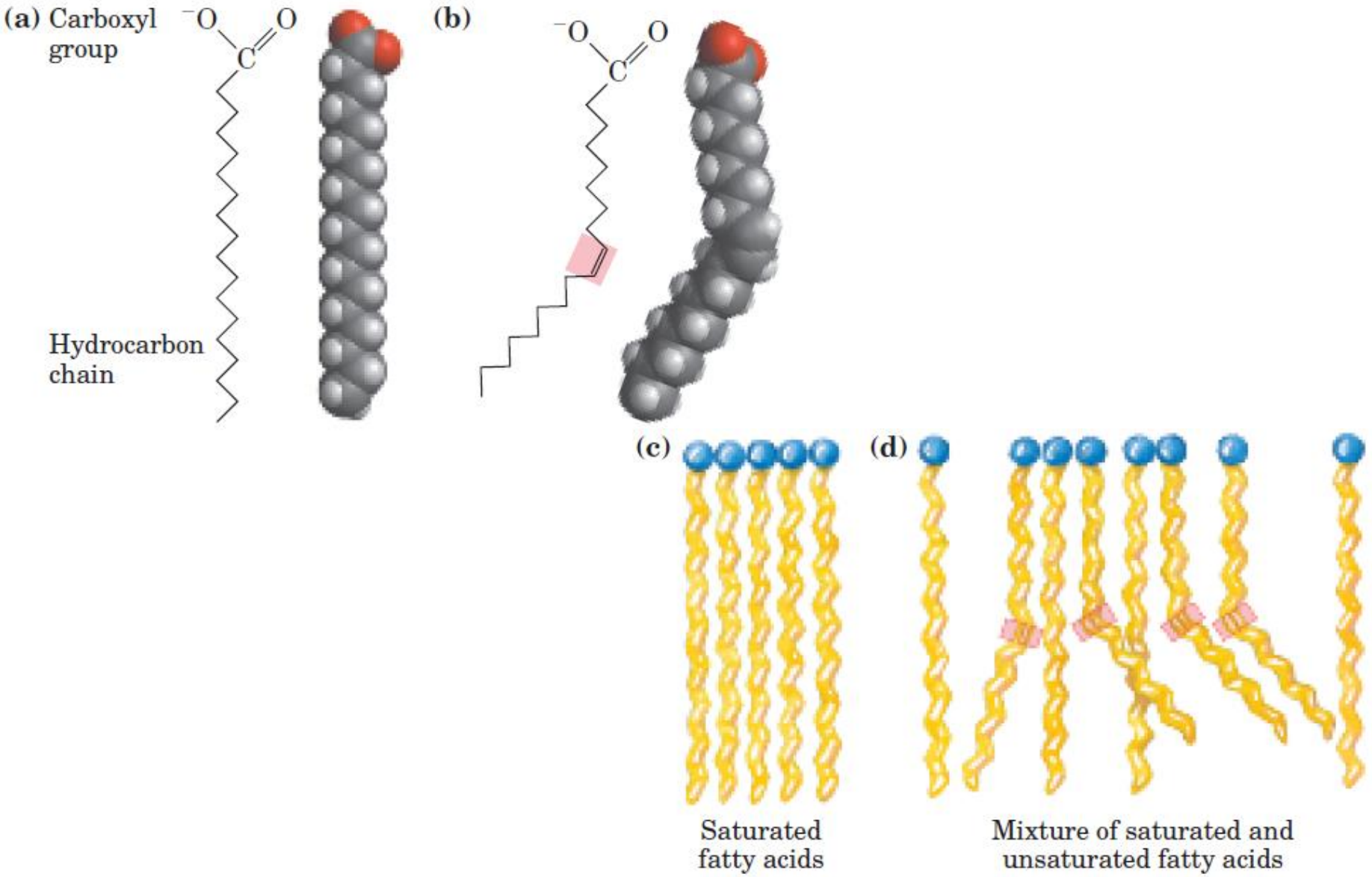
Lipids

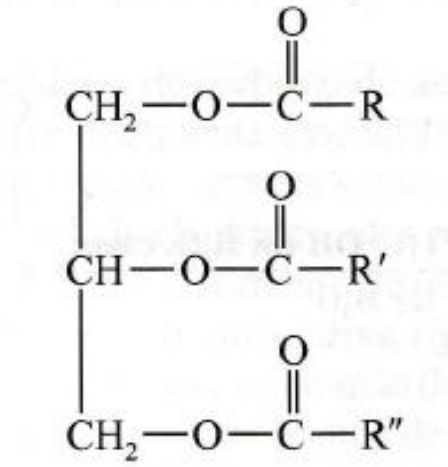
TABLE 10–1 Some Naturally Occurring Fatty Acids: Structure, Properties, and Nomenclature

Carbon skeleton	Structure*	Systematic name†	Common name (derivation)	Melting point (°C)	Solubility at 30 °C (mg/g solvent)	
					Water	Benzene
12:0	$CH_3(CH_2)_{10}COOH$	*n*-Dodecanoic acid	Lauric acid (Latin *laurus*, "laurel plant")	44.2	0.063	2,600
14:0	$CH_3(CH_2)_{12}COOH$	*n*-Tetradecanoic acid	Myristic acid (Latin *Myristica*, nutmeg genus)	53.9	0.024	874
16:0	$CH_3(CH_2)_{14}COOH$	*n*-Hexadecanoic acid	Palmitic acid (Latin *palma*, "palm tree")	63.1	0.0083	348
18:0	$CH_3(CH_2)_{16}COOH$	*n*-Octadecanoic acid	Stearic acid (Greek *stear*, "hard fat")	69.6	0.0034	124
20:0	$CH_3(CH_2)_{18}COOH$	*n*-Eicosanoic acid	Arachidic acid (Latin *Arachis*, legume genus)	76.5		
24:0	$CH_3(CH_2)_{22}COOH$	*n*-Tetracosanoic acid	Lignoceric acid (Latin *lignum*, "wood" + *cera*, "wax")	86.0		

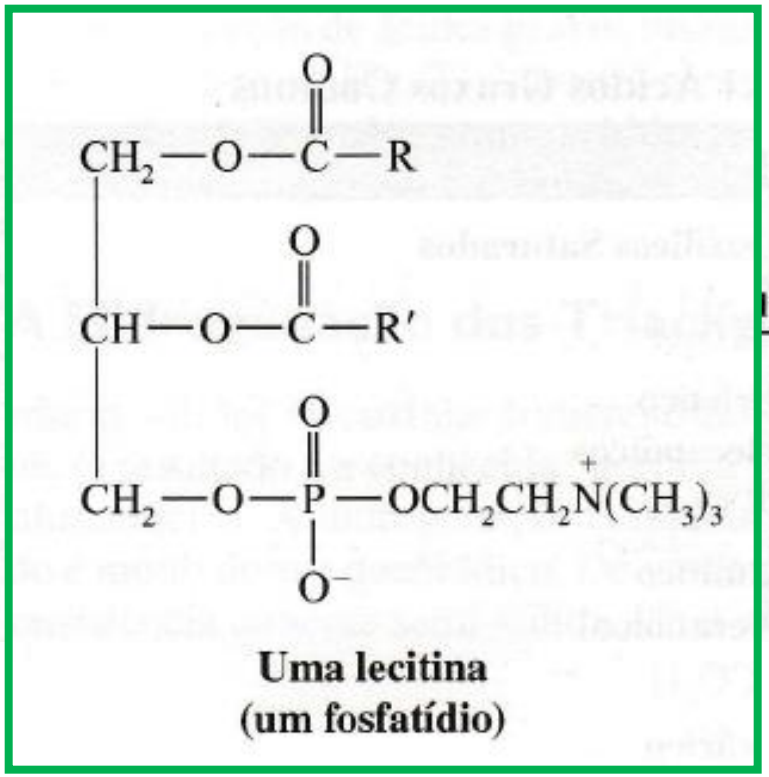
Ácidos graxos



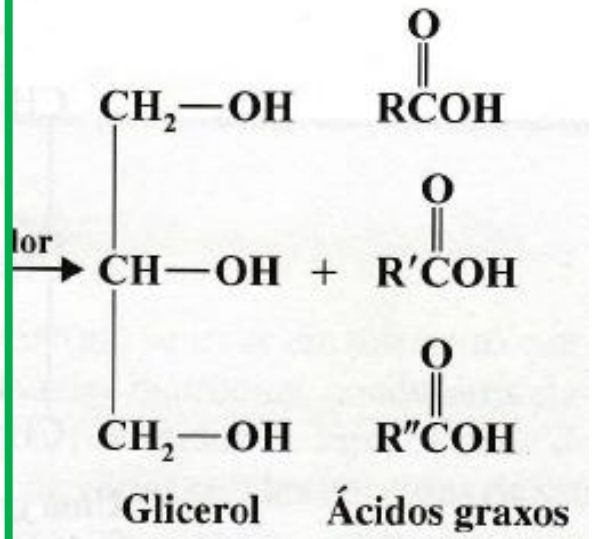
Ácidos graxos



Uma gordura ou um óleo
(um triacilglicerol)



Uma lecitina
(um fosfatídio)

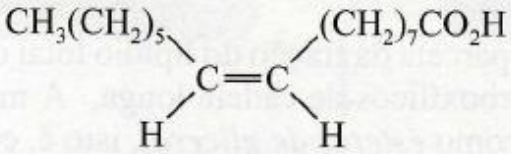
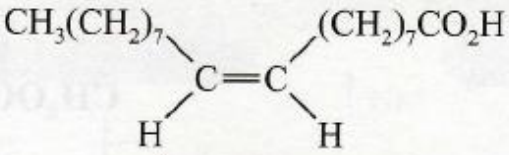
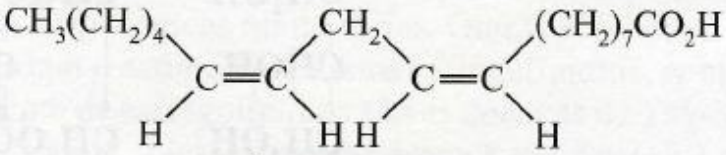
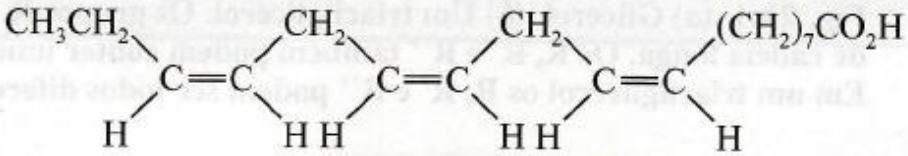


Glicerol Ácidos graxos

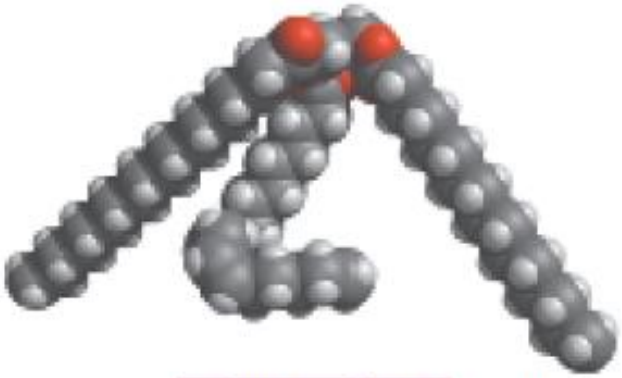
Ácidos graxos (1)

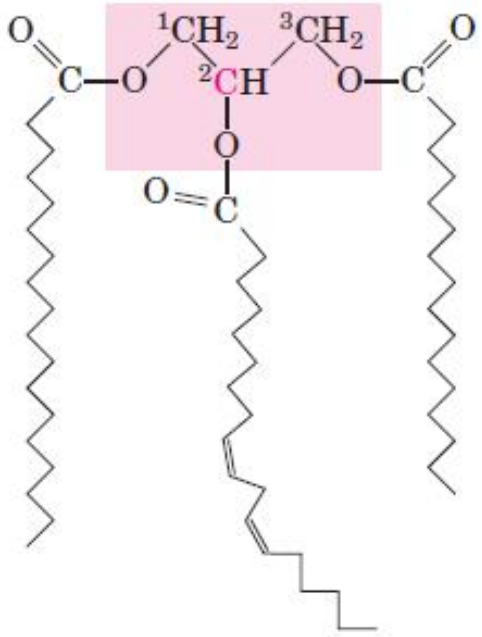
	pf (°C)
Ácidos Carboxílicos Saturados	
$CH_3(CH_2)_{12}CO_2H$	54
Ácido mirístico (ácido tetradecanóico)	
$CH_3(CH_2)_{14}CO_2H$	63
Ácido palmítico (ácido hexadecanóico)	
$CH_3(CH_2)_{16}CO_2H$	70
Ácido esteárico (ácido octadecanóico)	

Ácidos graxos

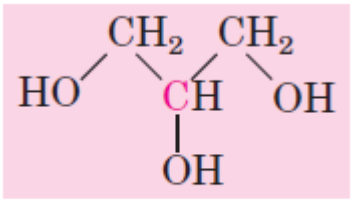
Ácidos Carboxílicos Insaturados	pf (°C)
 **Ácido palmitoléico** **(ácido *cis*-9-hexadecenóico)**	32
 **Ácido oléico** **(ácido *cis*-9-octadecenóico)**	4
 **Ácido linoléico** **(ácido *cis,cis*-9,12-octadecadienóico)**	−5
 **Ácido linolênico** **(ácido *cis,cis,cis*-9,12,15-octadecatrienóico)**	−11

Glycerol and triacylglycerol



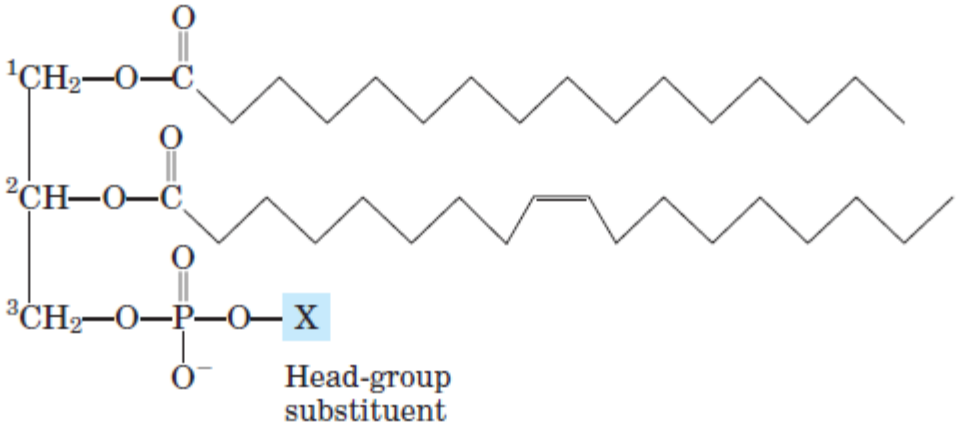


1-Stearoyl, 2-linoleoyl, 3-palmitoyl glycerol,
a mixed triacylglycerol

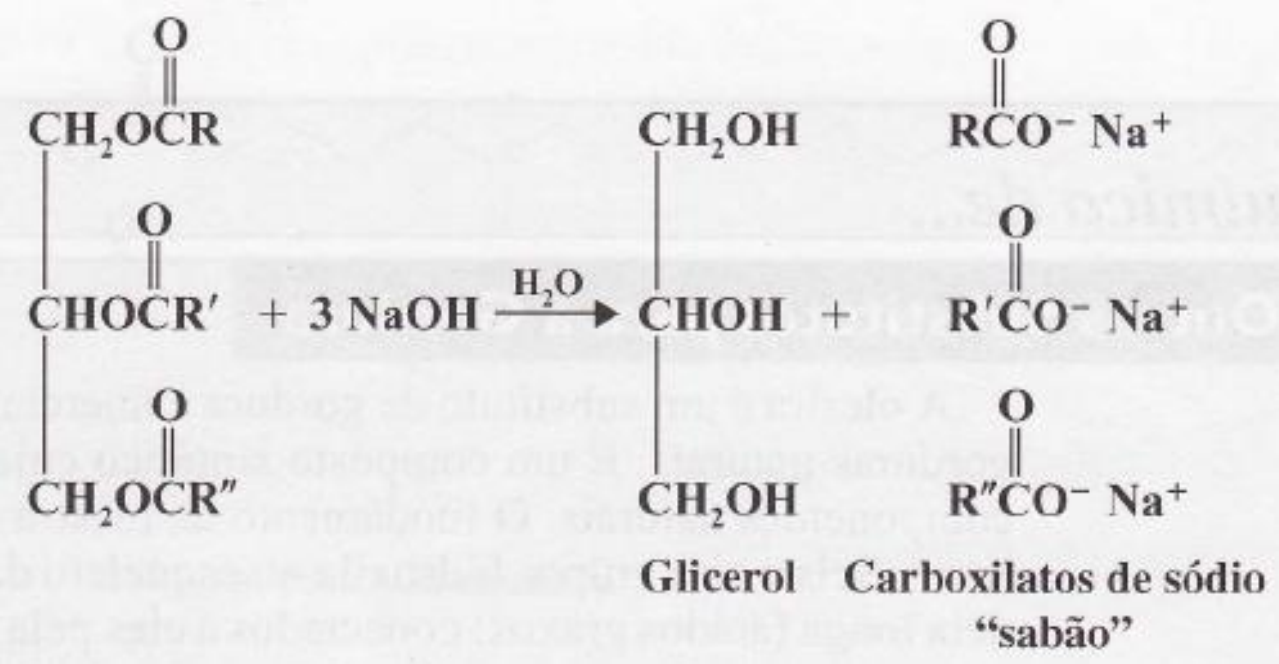


Glycerol

Glycerophospholipid
(general structure)

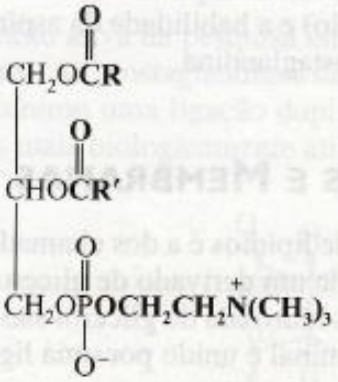


Saponificação de triacilglicerol



Fosfolipídeos e membrana celular

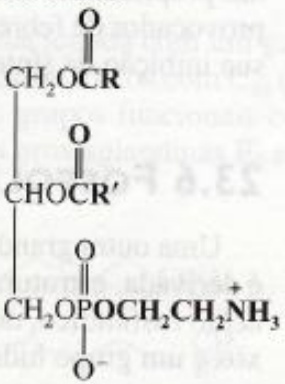
Lecitinas



(a partir da colina)

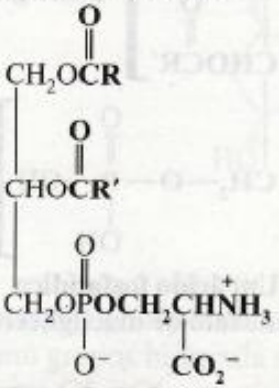
R é saturado e
R′é insaturado

Cefalinas



(a partir do 2-aminoetanol)

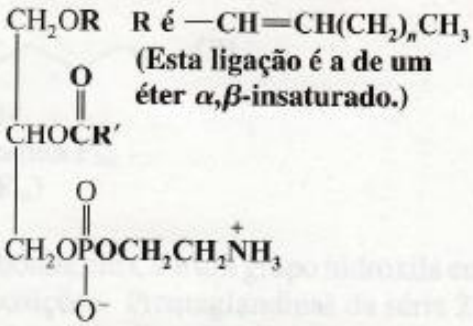
Fosfatidilserinas



(a partir da L-serina)

R é saturado e R′ é insaturado.

Plasmalogênios

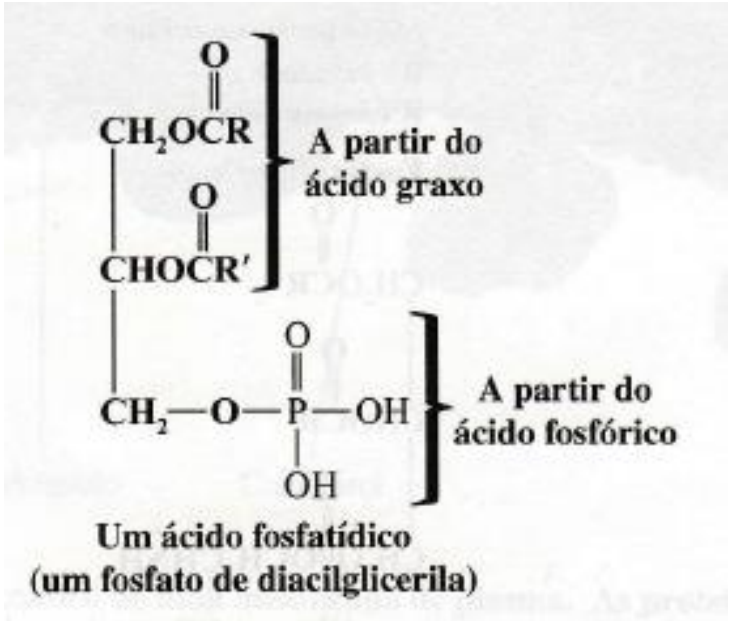


R é —CH=CH(CH$_2$)$_n$CH$_3$
(Esta ligação é a de um éter α,β-insaturado.)

(a partir do 2-aminoetanol) ou

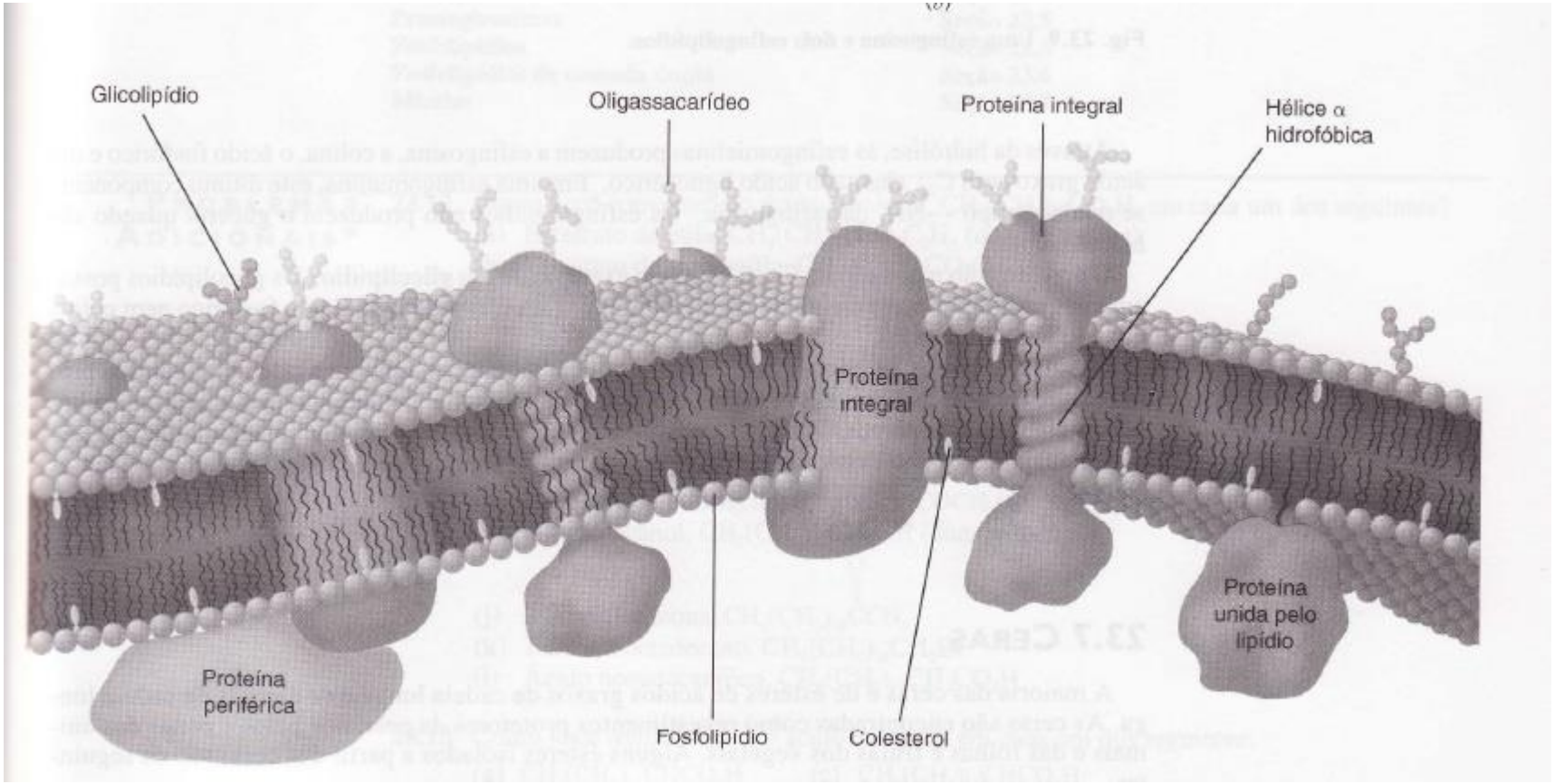
$OCH_2CH_2\overset{+}{N}(CH_3)_3$ (a partir da colina)

R′ é o de um ácido graxo insaturado.

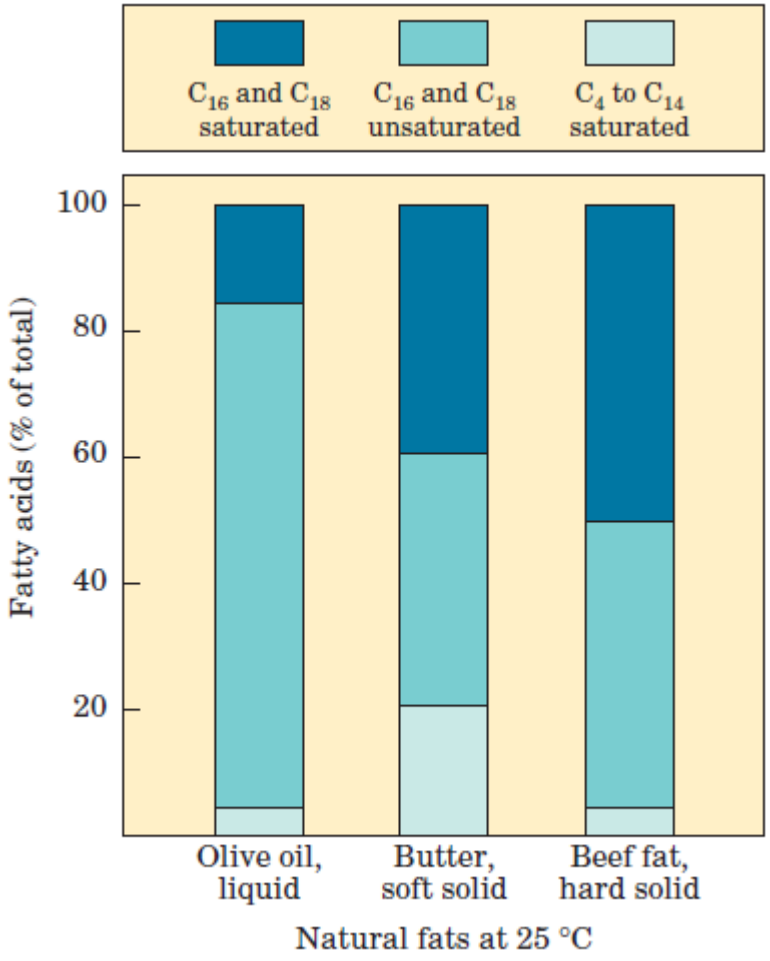


Um ácido fosfatídico
(um fosfato de diacilglicerila)

Fosfolipídeos e membrana celular (2)

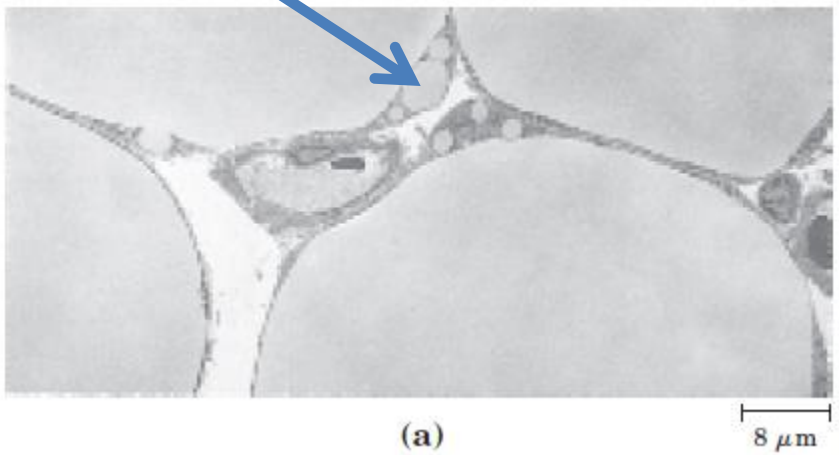


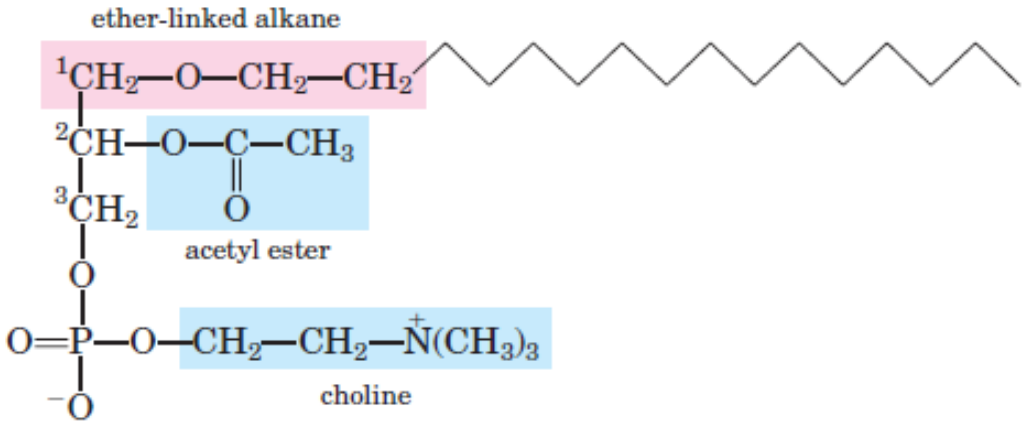
Fats everywhere...



Get a detergent and check its chemical composition...

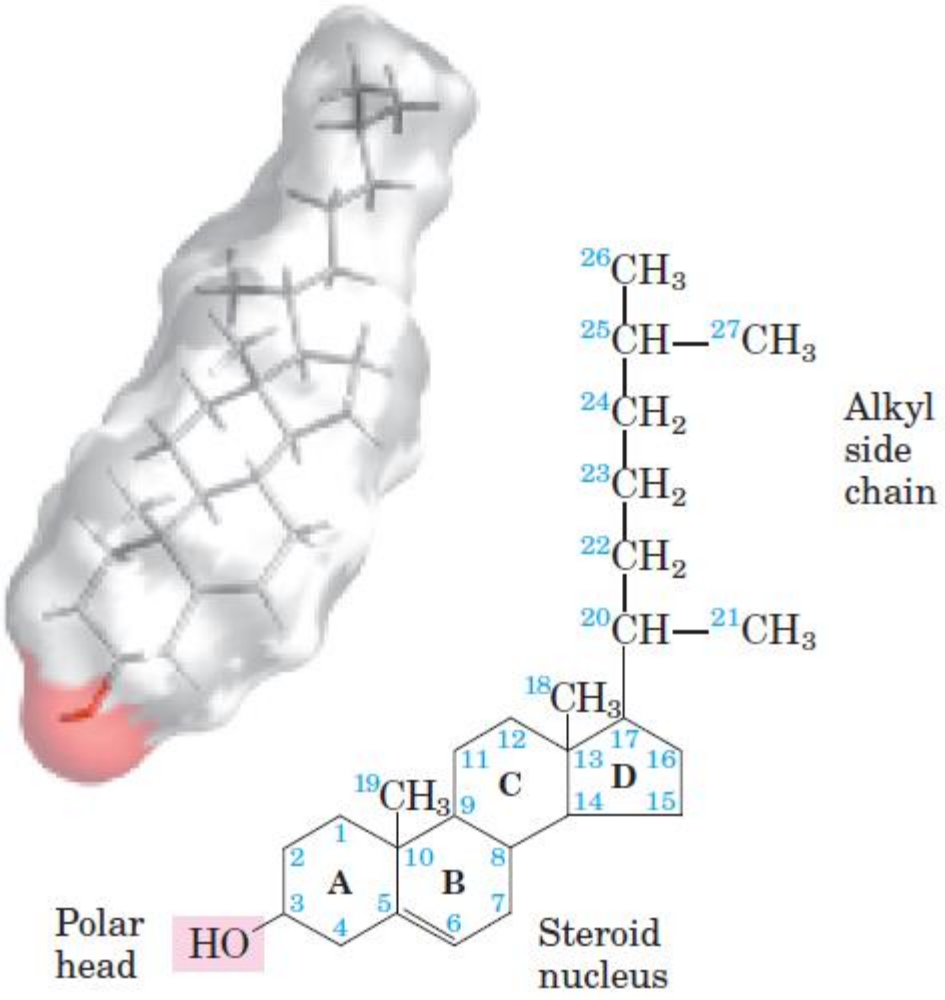
Fat stores inside the cell



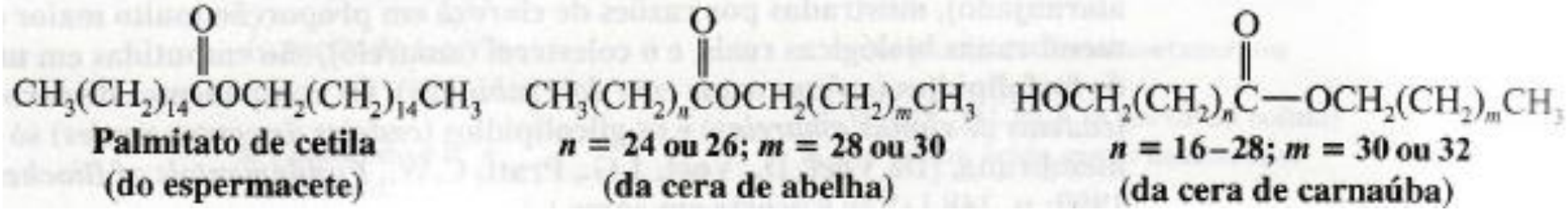


Platelet-activating factor

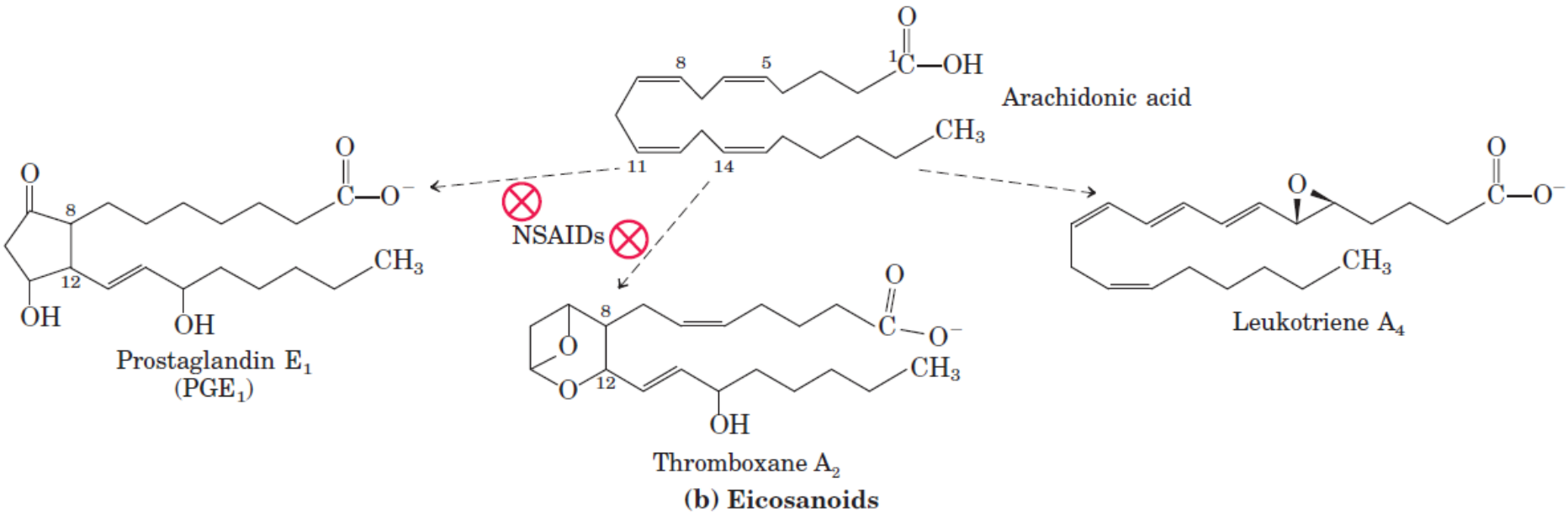
Cholesterol



Ceras

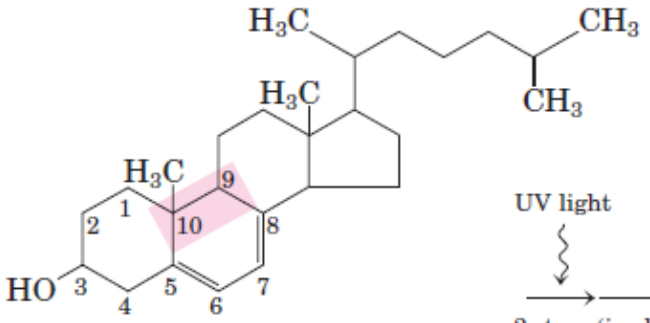

O
CH3(CH2)14COCH2(CH2)14CH3
Palmitato de cetila
(do espermacete)
O
CH3(CH2)nCOCH2(CH2)mCH3
n = 24 ou 26; m = 28 ou 30
(da cera de abelha)
O
HOCH2(CH2)nC—OCH2(CH2)mCH3
n = 16–28; m = 30 ou 32
(da cera de carnaúba)

Inflamation signaling depends on...



Vitamin D_3

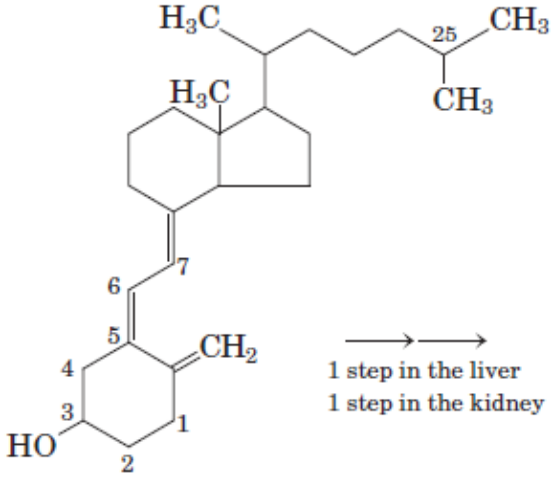
(a)



7-Dehydrocholesterol

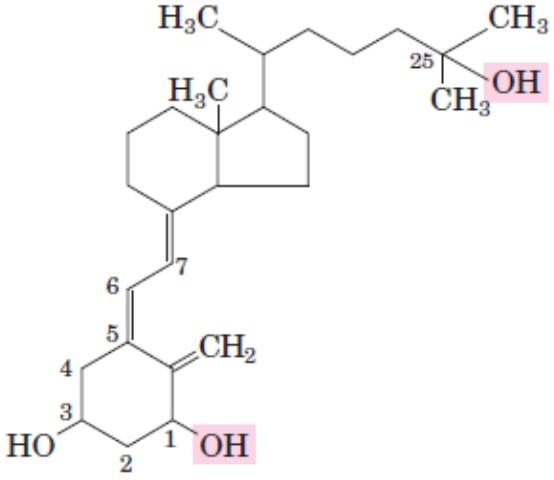
UV light

2 steps (in skin)



Cholecalciferol (vitamin D_3)

1 step in the liver
1 step in the kidney



1,25-Dihydroxycholecalciferol
(1,25-dihydroxyvitamin D_3)

Before vitamin D treatment

After 14 months of vitamin D treatment