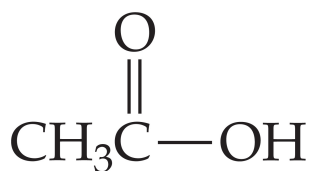


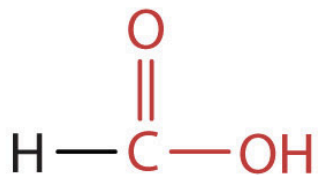
Ch17: Carboxylic Acids and Their  
Derivatives

# Carboxylic Acid Compounds

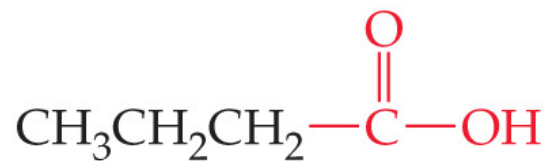
Volatile acids have strong, sharp odors.



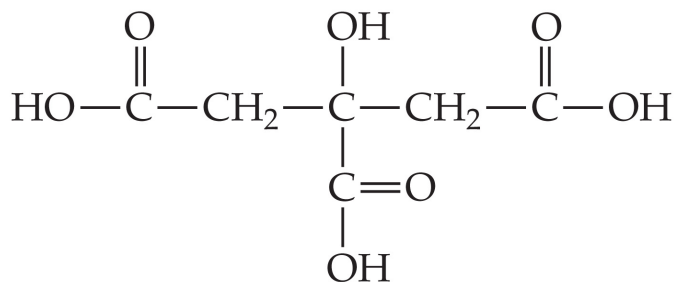
Acetic acid



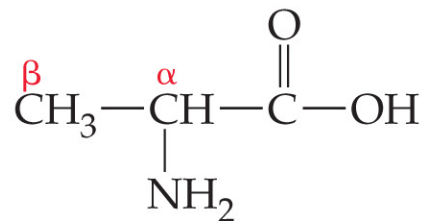
Formic acid



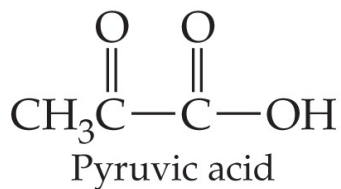
Butyric acid  
(rancid butter)



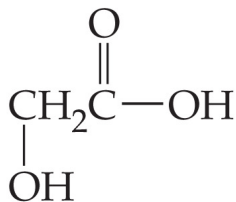
Citric acid



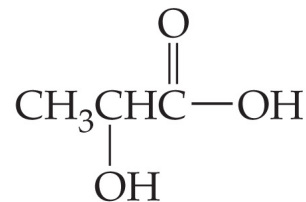
$\alpha$ -Aminopropionic acid



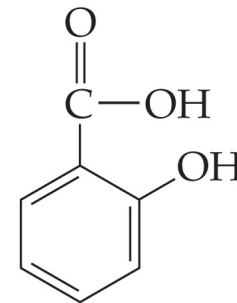
Pyruvic acid



Glycolic acid  
(in sugar cane)



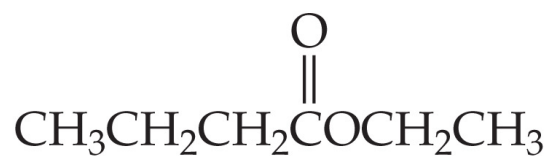
Lactic acid  
(in sour milk)



Salicylic acid  
(in willow trees)

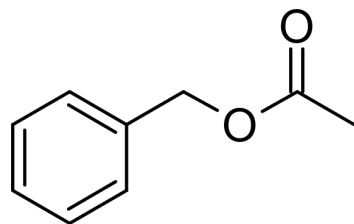
# Ester Compounds

Volatile esters have pleasant, fruity odors.

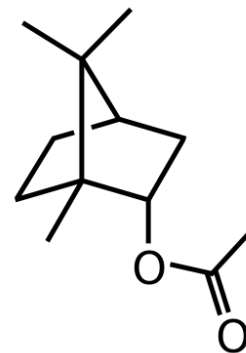


Ethyl butyrate  
(Ethyl butanoate)

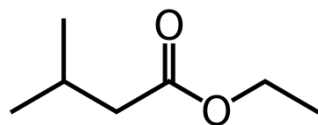
pineapple



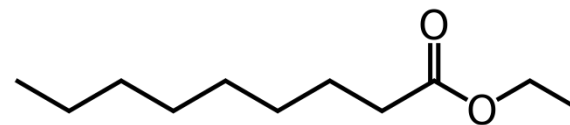
Pear, strawberry, jasmine scent



pine



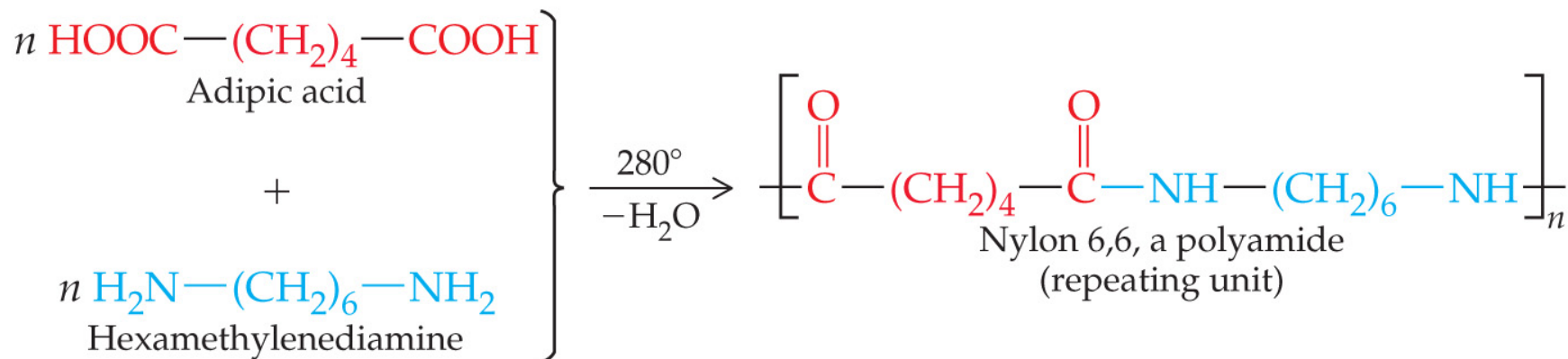
apple



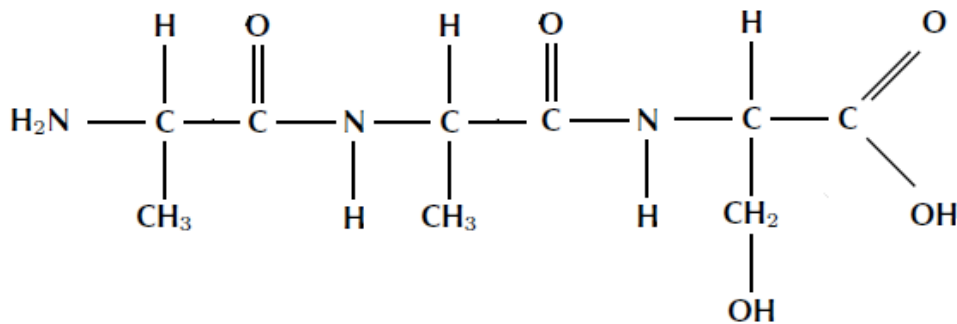
grape

# Polyamide Compounds

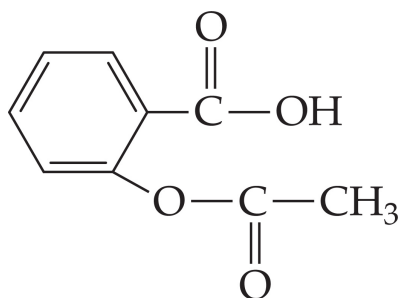
Amides are generally odorless.



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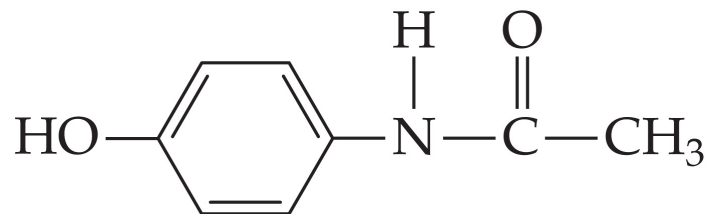


# Carboxylic Acid Derivative Drugs



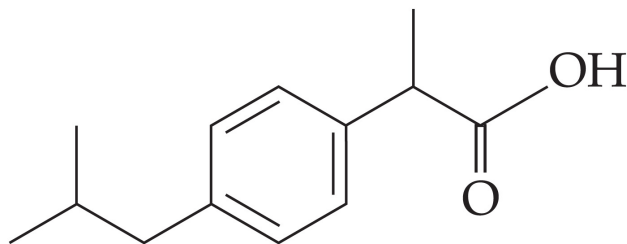
Aspirin  
(acetylsalicylic acid)

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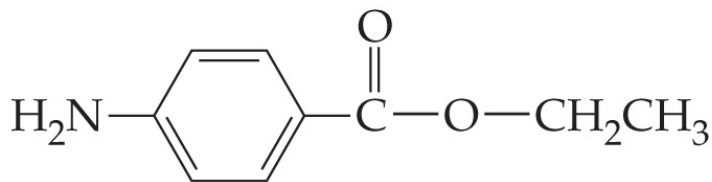
Acetaminophen (Tylenol)

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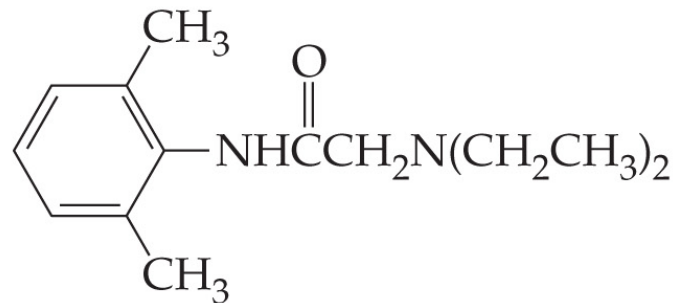
Ibuprofen (Advil, Motrin)

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Benzocaine

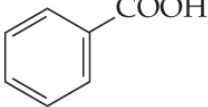
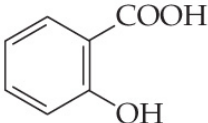
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Lidocaine

# Common Names for Some Carboxylic Acids

**TABLE 17.1** Physical Properties of Some Carboxylic Acids

STRUCTURE	COMMON NAME	MELTING POINT (°C)	BOILING POINT (°C)
<b>Carboxylic Acids</b>			
HCOOH	Formic	8	101
CH <sub>3</sub> COOH	Acetic	17	118
CH <sub>3</sub> CH <sub>2</sub> COOH	Propionic	-22	141
CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> COOH	Butyric	-4	163
CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> COOH	Valeric	-34	185
CH <sub>3</sub> (CH <sub>2</sub> ) <sub>16</sub> COOH	Stearic	70	383
<b>Dicarboxylic Acids</b>			
HOOC-COOH	Oxalic	190	Decomposes
HOOC-CH <sub>2</sub> -COOH	Malonic	135	Decomposes
HOOC-CH <sub>2</sub> -CH <sub>2</sub> -COOH	Succinic	188	Decomposes
HOOC-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -COOH	Glutaric	98	Decomposes
<b>Unsaturated Acids</b>			
H <sub>2</sub> C=CHCOOH	Acrylic	13	141
CH <sub>3</sub> CH=CHCOOH	Crotonic	72	185
<b>Aromatic Acids</b>			
	Benzoic	122	249
	Salicylic	159	Decomposes