

Organic Chemistry 212

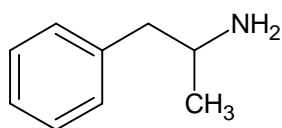
Prof J. Walker

Notes: *Chapter Eight – Amines*

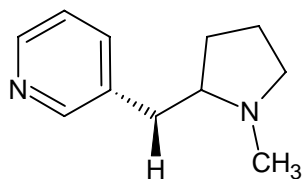
An amine consists of nitrogen bonded to one (primary), two (secondary) or three (tertiary) carbon atoms.

Write the structures for methyl amine, dimethylamine and trimethylamine:

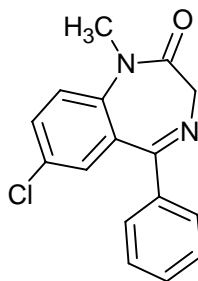
Here are some amines you've heard about:



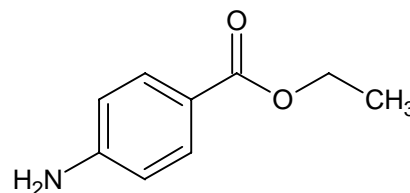
Amphetamine



(s) - Nicotine



Valium



Benzocaine

Amines are further classified as aliphatic or aromatic. An **aliphatic amine** is one in which all the carbons bonded to nitrogen are derived from alkyl groups. An **aromatic amine** is one in which one or more of the groups bonded to nitrogen are aryl groups. When the nitrogen is part of an aromatic ring the amine is classified as a **heterocyclic aromatic amine**.

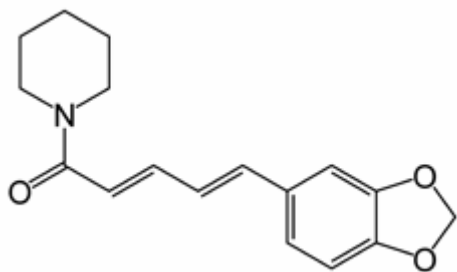
Memorize the structure of the following heterocyclic aromatic amines:

Pyridine

Pyrimidine

Alkaloids are basic nitrogen-containing compounds found in the roots, bark, leaves, berries, or fruits of plants.

Give the common names for some alkaloids:



Piperine; the chemical responsible for the pungency of black pepper.

Write structures for these common amines:

Aniline

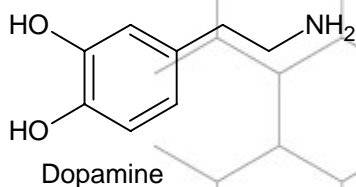
Cyclohexylamine

N,N-Dimethylcyclopentanamine

Triethylamine

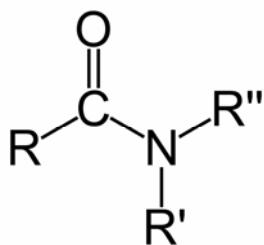
Primary and secondary amines can hydrogen bond but not as effectively as alcohols. The most important property of amines is their basicity. Write an expression for the K_b of methylamine.

Amines exist as conjugated acids in blood. Draw dopamine in its conjugate acid form:



Is dopamine an aliphatic amine or an aromatic amine?

Amines react with strong acids to form water-soluble salts. The salt form of the amine is less susceptible to oxidation and decomposition by atmospheric oxygen so these salts are often preferred for drugs to extend their shelf life – this the number of drugs having $\cdot\text{HCl}$ in their formula.



Compounds of the structure:

are called amides NOT amines.