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The Alkaloids

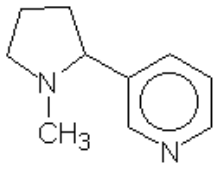
It is quite difficult to give a precise definition for the class of compounds referred to as alkaloids [1]. However it is probably fair to say that the definition proposed by **Ladenburg** in the late 1880s is probably reasonable and still valid today. Ladenburg suggested that alkaloids were compounds:

- derived from plants
- with a basic character (hence the term alkaloid from alkali)
- contained a nitrogen based heterocylic ring within their molecules

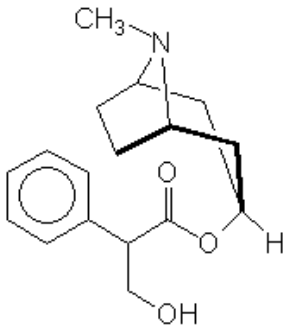
In general alkaloids are physiologically very active and often extremely poisonous - they are the "bad guys" of the natural products world. Having said this, many find applications in medicine when administered in small doses.

Alkaloids can be sub-categorised [2] according to:

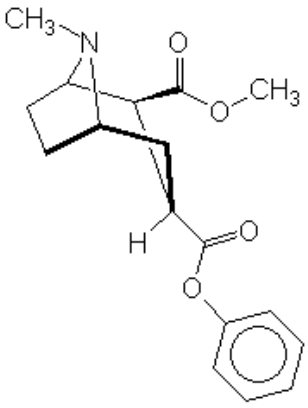
1. ***Monocyclic alkaloids*** - which contain a single, unfused ring. A typical monocyclic alkaloid is ***nicotine:***



2. ***Bicyclic alkaloids*** - these may be illustrated by the ***tropane*** alkaloids which consist of molecules with a 1,4 nitrogen bridged *cyclo*heptane structure. Atropine and cocaine are examples

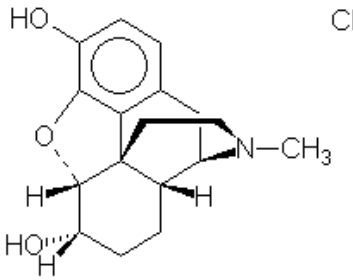


Atropine

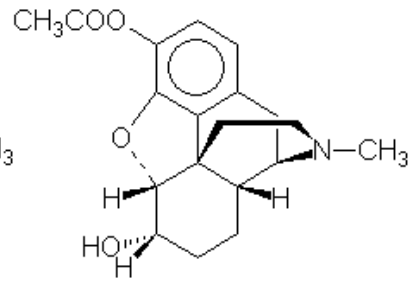


Cocaine

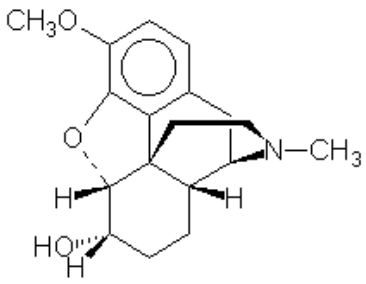
3. ***Polycyclic alkaloids*** such as strychnine, lysergic acid, cannabinol, morphine, heroin and codeine.



Morphine



Heroin



Codeine

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