

Alkaloids and its Therapeutic Effects

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DESCRIPTION

Some similar chemicals with neutral or even slightly acidic characteristics are also included in this group. Alkaloids are manmade substances that have a similar structure. Alkaloids can contain oxygen, sulphur and, in rare cases, additional elements like chlorine, bromine and phosphorus, in addition to carbon, hydrogen and nitrogen [1]. There is no apparent distinction between alkaloids and other nitrogen-containing natural substances. Alkaloids are not commonly used to describe compounds such as amino acid peptides, proteins, nucleotides, nucleic acid, amines or antibiotics [2]. Natural substances with exocyclic nitrogen are commonly categorised as amines rather than alkaloids. Alkaloids, on the other hand, are thought to be a particular case of amines by certain authors. The term "alkaloids" was coined by German chemist Carl Friedrich Wilhelm Meitner in 1819 and it is derived from the Late Latin word alkali and the suffix-o. However, Oscar Jacobsen's review article in Albert Ladenburg's chemical lexicon in the 1880s was the first time the phrase was widely used [3]. Humans have employed alkaloid-containing plants for therapeutic and recreational purposes since the beginning of time. Medicinal herbs, for example, date back to around 2000 BC in Mesopotamia. The Egyptian queen gave Helen a medication that brought her unconsciousness, according to Homer's Odyssey. The present was rumoured to be an opium-based substance [4].

Ephedra and opium poppies were referenced in a Chinese treatise on houseplants published in the 1st-3rd centuries BC. Also, South American Indians have been using coca leaves since the dawn of humanity. Since antiquity, arrows have been poisoned with extracts from plants containing deadly alkaloids like aconite and tubocurarine. Alkaloids have been studied since the late 1800s. Friedrich Sertürner, a German chemist, isolated a "soporific principle" from opium in 1804 and named it "morphium" after Morpheus, the Greek deity of dreams; the substance is still known by this name in German and several other Central-European languages [5]. French scientist Joseph Louis Gay-Lussac coined the term "morphine," which is used in both English and French. Most alkaloids have oxygen in their molecular structure and at room temperature, these compounds are colourless crystals. Volatile, colourless, greasy liquids are

typical of oxygen-free alkaloids like nicotine or coniine. Berberine (yellow) and sanguinary are examples of coloured alkaloids. The majority of alkaloids are weak bases, but some are amphoteric, such theobromine and theophylline. Many alkaloids are poorly soluble in water but highly soluble in organic solvents like diethyl ether, chloroform or 1, 2-dichloroethane. Caffeine, cocaine, codeine and nicotine are water soluble, whereas morphine and yohimbine are water soluble only very slightly.

Salts of varied strengths are formed when alkaloids and acids combine. Most organic solvents are poorly soluble in these salts, whereas they are normally easily soluble in water and ethanol. The organic solvent-soluble scopolamine hydro bromide and the water-soluble quinine sulphate are exceptions. There is no single method for extracting alkaloids from natural raw materials due to the structural diversity of alkaloids. The fact that most alkaloids are soluble in organic solvents but not in water, as well as the fact that their salts have the opposite propensity, is used in most procedures. Alkaloids are found in most plants. Individual alkaloids are isolated when the mixture is removed. Before extraction, the plants are finely ground.

CONCLUSION

The majority of alkaloids are found as salts of organic acids in uncooked plants. After extraction, the alkaloids may remain salts or change to bases. After the raw material has been treated with alkaline solutions, the alkaloid bases are extracted using organic solvents as 1, 2-dichloroethane, chloroform, diethyl ether or benzene. Weak acids dissolve pollutants, converting alkaloid bases to salts that may be washed away with water. If necessary, an alkaloid salt aqueous solution is turned alkaline again before being treated with an organic solvent. The procedure is carried out again and again until the desired purity is achieved.

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