

THE EFFECT OF ALKALOIDS ON THE HUMAN BODY

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<https://doi.org/10.5281/zenodo.10907406>

Abstract: "Alkaloids" are basic nitrogen-containing organic compounds found in plants and animals. By the 19th century, strychnine, quinine, caffeine, atropine, ephedrine and others were isolated from alkaloids. Academicians S.Yu.Yunusov and O.S. Sadikov's work with his students on alkaloids. According to the studies by S.Yu.Yunusov, alkaloids are most abundantly collected from the shoot of the plant in early spring, from the seeds of annual plants in autumn, from the roots and seeds of perennial plants. Chemistry of Plant Substances of the Academy of Sciences of Uzbekistan in 1943-1993. 266 plant species belongs to 29 families, 345 species were studied at the institute under the leadership of S. Yu. Yunusov, and 913 alkaloids were isolated from them.

Keywords: the institute, alkaloids, Strychnine, in water, chloroform, ethyl alcohol.

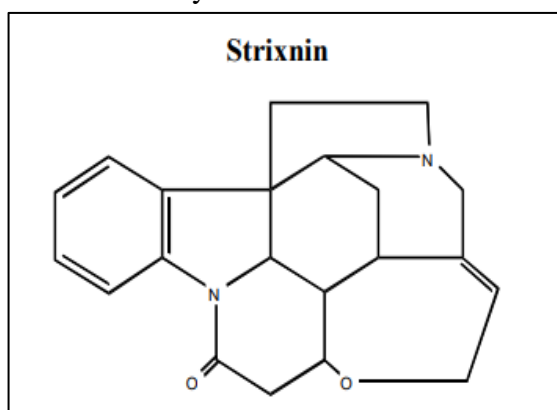
ВЛИЯНИЕ АЛКАЛОИДОВ НА ОРГАНИЗМ ЧЕЛОВЕКА

Аннотация: «Алкалоиды» — основные азотсодержащие органические соединения, встречающиеся в растениях и животных. К 19 веку из алкалоидов были выделены стрихнин, хинин, кофеин, атропин, эфедрин и другие. Академики С.Ю.Юнусов и О.С. Работа Садикова со своими учениками по алкалоидам. По исследованиям С.Ю.Юнусова, алкалоиды наиболее обильно собираются из побега растения ранней весной, из семян однолетних растений осенью, из корней и семян многолетних растений. Химия растительных веществ Академии наук Узбекистана в 1943-1993 гг. 266 видов растений относятся к 29 семействам, в институте под руководством С.Ю. Юнусова и из них выделено 913 алкалоидов.

Ключевые слова: институт, алкалоиды, стрихнин, в воде, хлороформ, этиловый спирт.

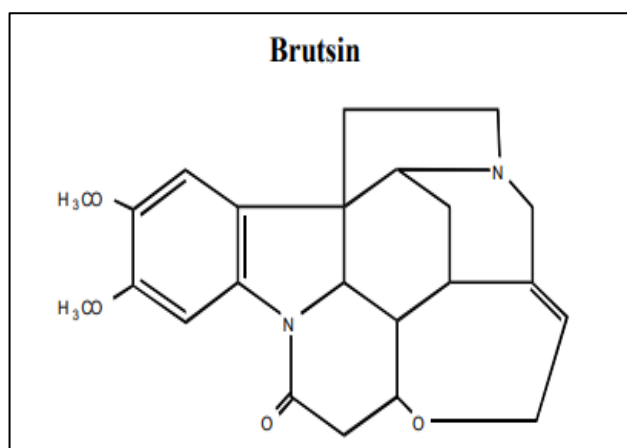
INTRODUCTION

The structure of 518 new alkaloids belonging to different groups were determined and introduced to science. Indole alkaloids, Strychnine, brucine, and reserpine are toxicologically significance and effect on the human body.



Strychnine alkaloid is found with brucine alkaloid in gorse, bitter gourd and other plants. Strychnine is a very toxic substance. Strychnine is basically soluble in chloroform, ethyl alcohol,

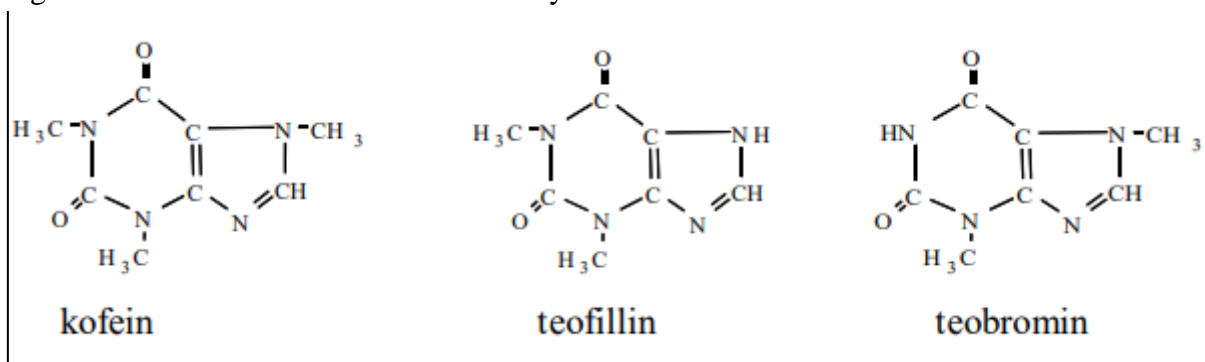
slightly soluble in water and diethyl ether. Strychnine nitrate salt is soluble in water, chloroform, ethyl alcohol, also well soluble in water and ethyl alcohol. Strychnine can be extracted from biological objects by acidified water, alcohol, and electro dialysis. Strychnine is soluble in the organic solvent in both alkaline and acidic conditions, and the main part is extracted in alkaline conditions. In medicine, nitrate strychnine and an alcoholic solution of nutmeg are used in drug withdrawal, blood pressure decreases, bradycardia, metabolism decreases, paresis and paralysis. When poisoned with strychnine, it stimulates the central nervous system of the body, and quickly reversible symptoms of convulsions occur, and death occurs due to paralysis of the central nervous system in the body. Poisoning with strychnine is especially dangerous in cases of liver, kidney, heart disease and children's diseases. It is absorbed very quickly in the body, about 80% is metabolized, and the rest is excreted unchanged through the urine. Metabolites have not been fully studied yet. Strychnine can accumulate in the body and remain in the organs of the corpse for several years.



Brucin is chemically similar to strychnine. Brucin is basically soluble in ethyl alcohol, chloroform, diethyl ether and poorly soluble in water. Brucin alkaloid dissolves in the organic solvent layer under alkaline and acidic conditions (pH=7.5-12). Brucin is not used in medicine, it is used in practice to determine nitric acid. The toxicological significance of brucinin stimulates heart activity, dilates cardiac veins and bronchial muscles. The main part of brucine is metabolized in the body.

RESULTS AND DISCUSSION

Alkaloids containing xanthine. Caffeine, theobramine, and theophylline, their toxicological significance and effects on the human body.



Caffeine is basically soluble in chloroform, alcohol and water, slightly soluble in ether, mainly extracted from chloroform in acidic condition, partially in alkaline condition. Caffeine has a stimulating effect on the central nervous system, reduces the effect of narcotics and sleeping pills,

stimulates breathing and other nerve centers. Caffeine is used in medicine as a base and benzoate and salicylate salts. Caffeine is quickly absorbed and broken down in the body, a small amount is excreted through urine. The rest accumulates in the body. Caffeine has a weaker toxic effect than theophylline, and a stronger toxic effect than theobromine. Theobromine (3,7-dimethylxanthine) This alkaloid is preserved in cocoa and tea leaves, and there are many ways to synthesize it. Theobromine oxidizes and decomposes into methylurea and methylaloxan. Theobromine hardly passes from an alkaline solution to an organic layer, and from an acidic solution it dissolves well into an organic layer. Theobromine stimulates heart activity, dilates cardiac veins and bronchial muscles, enhances diuresis. Theobromine stimulates the central nervous system more weakly than caffeine and is used in spasm of cerebral blood vessels and chronic coronary disease. Theobromine is used in the form of sodium and salicylate salts and as part of other pharmaceutical drugs. Theobromine is well absorbed in the body, as a result of its oxidation and N-demethylation, 3-methyl-7-methylxanthine and 7-methylureic acid are formed and excreted from the body through urine.

CONCLUSION

Theophylline (1,3-dimethylxanthine) Theophylline is extracted from tea leaves. Today it is synthesized and isolated. It passes from the composition of the acidic solution to the organic solvent layer, it is an isomer of theobromine. Theophylline is used in medicine in the form of powder and tablets. The main properties of theophylline are diuretic, anti-asthmatic, and used in ischemic heart disease. It undergoes metabolism and is excreted from the body in the form of 1,3-dimethyl, 3-methyl, 1-methyl urea through urine.

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