

***Herba Belladonnae*; Belladon otu-Güzelayrat otu** **Dadly nightshade**

Drog; *Atropa belladonna* / *A. acuminata* (Solanaceae) consists of dry leaves or dry leaves with flowers.

Drog; When calculated in terms of hyoscyamine, it should contain more than 0.30% alkaloids. It is a perennial plant that grows in Europe and Asia.

It is a psychoactive and toxic plant that has been used medicinally for many years.

Belladonna; means beautiful woman. Because when the plant extract is used in eyes, it dilates the pupil and enlarges the pupil.

Ophthalmologists use it in examinations.

The homeland of *A. belladonna* is in the south of Europe, Anatolia and Iran.

A. acuminata grows in Asia (Himalay and Kashmir).

The most alkaloids have been found in *A. belladonna* var. *lutea*

It is a perennial herbaceous plant 1-1.5 m high and has a root-shaped root. The leaves are petiolate and oval shaped, with full edges and hairs on the veins on the lower face. The flowers are single, bell-shaped, purplish brown in color on the leaf seat.

The fruit is a cherry-sized black shiny grocery store.

The glandular hair is either a short-stemmed head with a multicellular or a long-stemmed, and a single-celled head (Solanaceae type glandular hair).

Cover hair; single row multicellular

There are cells in the mesophyll carrying crystal sand

There are cuticle wrinkles on the epiderma.

Atropa belladonna leaves usually carry 0.3-0.6% alkaloids, HYOCYAMINE and ATROPINE as major alkaloids. It carries small amounts of volatile bases pyridine and N-methylpyrrolidine (they are also used to obtain these alkaloids)

Herba Belladonnae has antispasmodic effect due to its alkaloids (Asthma, whooping cough).

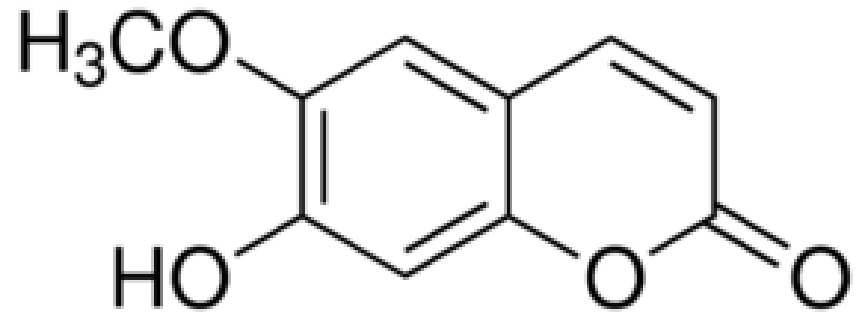
USAGE: It is used to enlarge the pupil in eye operations.

It is used to relieve intestinal pain and peptic ulcer.

Its sedative and antispasmodic effects have positive effects on the reduction of tremors and intensity in Parkinson's disease and improvement of speech and movements.

All parts of the plant; shows analgesic, atypasmodic, hallucinogenic, mydriatic, narcotic and sedative effects.

The drug also contains a coumarin called scopoletol (6-methoxy-7-hydroxy-coumarin). It is only found in **Folia Belladonnae** leaves. It is not found in the leaves of the *Datura and Hyoscyamus* species. Therefore, scopoletol is an important component in distinction Belladon leaf from other leaves.



Radix Belladonnae

Atropa belladonna roots contain 0.4-0.8% alkaloids calculated on hyoscyamine.

Roots contain,

82-97% hyoscyamine

2.5-15% atropine

It carries 0.1-2.6% scopolamine.

Radix Belladonnae shows the same effect as herba.

Used in hemorrhoids as a pain reliever and mild local anesthetic.

It is used to obtain more active components.

In the Turkish pharmacopoeia,

Belladonna grass (Belladonnae Herba)

Belladonna powder (Belladonnae Herbae Pulvis)

Standardized Belladonna powder (belladonnae Herbae pulvis standadisatus)

In the European Pharmacopoeia,

Belladonnae pulvis normatus: Contains 0.28-0.32% hyosyamin

Belladonnae leaf-dry extract-standardized: 0.95-1.05% alkaloids

Belladonnae leaf-tincture-standardized: 0.027-0.033% alkaloid

Galenical preparations, can be found into the composition for many troubles:

Cough, acute throat congestion (congestion)

Constipation treatment

In gastrointestinal pain

ATROPINUM / ATROPIN

- It is obtained from the root or aboveground parts of *Atropa belladonnae* and *A. acuminata* of the Solanaceae family, and from *Hyoscyamus muticus*.
- Atropine is also obtained by semi-synthesis at the esterification of alkaloids obtained from *Withania somnifera*.
- Atropine sulfas TF-dissolves in water, therefore it is used in the preparation of solutions.
- .
- Atropin methonitras TF is used in pharmacy.

Atropine salts are among the anticholinergic drug raw materials. Use in eye examination, iris resting, in cardiac blokage, morphine poisoning as antidote, sweat suppressant, asthma.

HIOSCYAMIN

From the leaves of *Atropa*, *Hyoscyamus* or *Duboisia myoporoides* etc.

The effects are the same as atropine.
CNS stimulant (such as atropine)

Sulphate and
Bromhydrate salts used in
pharmaceuticals.

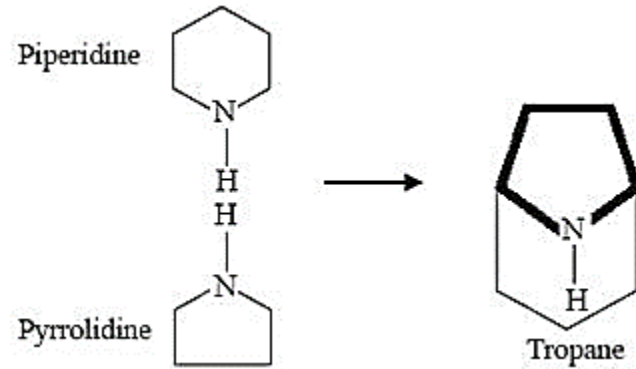
shortly

Atropine and Hyoscyamine
Parasympatholytics
Sympathomimetic-like effects
Increases heart rate
Decreases intestinal tone
Secretions
MIDRIATIC effect



Atropine
Toxic dose of agitation, hallucinations, delirium, etc.
Depressed and sedative effects in low doses

Scopolamine
Sedative, depressant, hypnotic effect on the central nervous system, with memory loss increases the effect of neuroleptics (improvement in parkinson)



Tropane does not occur naturally in the plant, but rather ester forms occur as secondary metabolites.

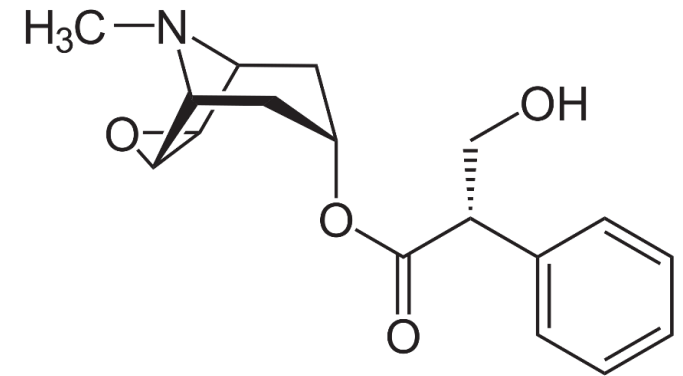
Tropans in pharmaceuticals are available in either natural or semisynthetic form.

Hiyosin Hydrobromidum, Hiyosin HBr Skopolamin bromhidrat

The compound is obtained from the *Datura myoporoides* and *Datura metel* herba

The levo isomer is registered in TF.
Its racemic shape also shows the same effect.

Scopolamine and its salts are mostly used against motion sickness.
Sedative in nerve shocks and used in Parkinson



Duboisia myoporoides

It grows in 3 species in Australia – from Solanaceae family

D. myoporoides and *D. leichardii* are the source for tropane alkaloids for more than 50 years. *D. myoporoides* and *D. leichardii* on the Eastern coast of Australia;

D. hopwoodii carries nicotine and similar alkaloids. Australian Aborigines mix the leaves with alkaline ash to prepare a mixture called "Pituri" and use it by keeping it in the cheek.

D. hopwoodii is found in Western and Central Australia.

It is used to obtain HYOCYAMINE and SCOPOLAMINE.

It carries 1-3% alkaloids. The leaves are easily picked and harvested twice a year. Approximately 1200 tons of leaves are sent to Germany, Switzerland and Japan annually.

There are patents and studies on obtaining scopolamine and hyoscyamine from *Duboisia* leaves by tissue culture.

Radix Mandragorae, Mandrake

Adam otu, adem otu, insan otu

Mandragora officinarum var. *vernalis* (green-white flower)

M. officinarum var. *autumnalis* (pale purple flower)

Solanaceae is a Mediterranean region plant.

Its fruit is oval, yellow-orange in color, and resembles the New World fruits in terms of color and size. For this reason, cases of poisoning are encountered.

A religious plant; It is said that even the harvesting of the roots was done before with a ceremony ...

Its root is fleshy gray-yellow color, it is divided into two, then branches again. This root is called mandrake root because it resembles human.

Roots carry 0.4% alkaloids

Atropine

Scopolamine

Hyoscyamine

kuskohigrin)

Drog is sedative, narcotic and analgesic.

In the Middle Ages, mandrake root decoction is known as the only anesthetic used in surgery. In the 14th century, ignored and replaced the sponge with the tincture of mandrake (Mandragora), hemlock (Conium maculatum), opium (Opium), wild lettuce (Lactuca) and ground ivy (Glechoma hederacea) and began to be used as "Soporific Sponge".

•If needed, the soaked sponge was drained from the patient's nose. The onion vinegar was smelled to help the patient to recover who fell asleep

Folia Cocae, Koka Leaf

- Plants are in the form of shrubs or shrubs.
- It reaches approximately 2 m in length.
- It is a native plant of South America. It is cultivated at an altitude of 500-2000 m. In the high regions of Peru and Bolivia, 500 m-2000 m plant culture is made.
- It has been cultivated for centuries. Leaves are collected 3 times a year. March, June and November
- Erythroxylaceae
- 0.5-1.5%
- Cocaine, cinnamyl cocaine, truksillin, hygrin, kiuscohigrin

Erythroxylum; means red-tree

E. coca Lam. there is. coca (Peruvian and Bolivian Coca leaf)

E. novogranatense (Morris) Hieron var. novogranatense (Colombia and Venezuela Coca leaf)

E. novogranatense (Morris) Hieron var. a variant of truxillense (Peru and Ecuador, Java Coca leaf)

Coca; It is the name given to the tree in Spanish

Truksillo is a Port in Peru.

In Peru and Bolivia; Coca leaves are produced legally for the pharmaceutical industry under international agreements. Again, these two countries are the countries where illegal coca leaves and Cocaine are produced.

25% of the cultured leaves are used by the local people.

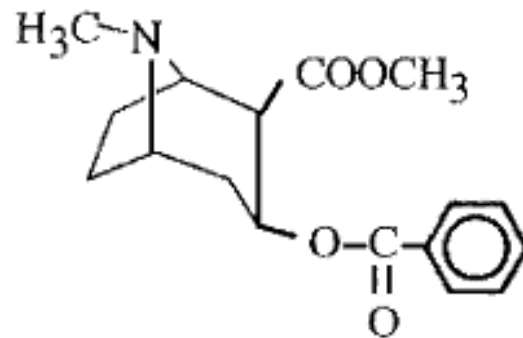
2% is used for the pharmaceutical industry.

The remaining amount is used illegally.

Microscopic properties

- There are simple crystals in mesophyll close to the vessels in Folia Cocae
- Sponge parenchyma has large intercellular spaces.
- There are papillae and stomata in the lower epidermis
- The stoma has two neighboring cells, the common wall of neighboring cells is not visible. Stoma is like the middle of two cells.

- Leaves carry 0.7-1.5% alkaloids.
- **COCAINE, CINNAMYL COCAIN and TRUXYLINE** are the most important-major alkaloids.
- Methyl salicylate is found in leaves as volatile compound 13.6%



BENZOYLMETHYLECGONINE
COKE

- 30-50 % of the total alkaloids in coca leaves are cocaine.
- Coca leaves are used by South American Indians to stop hunger and thirst by chewing. Because it creates an anesthetic effect on the gastric mucosa and hunger and fatigue as it improves muscle work. Coca leaves are also used for toothache.

- Before cocaine obtained from the leaves Coca Paste "Coca Cake" is produced, mostly in Colombia.
- 100-200 kg of dry leaves are used for approximately 1 kg of cake.
- 1 kg of cocaine is obtained from 2.5 kg cake.
- The leaves are picked in the spring; then in June and then in autumn
- (harvested 3 times a year)

- Cocaine was isolated in 1860.
- Until 1884, it was used only for tea and drink.
- Coca is known as the holy plant of the Incas.
- The researcher named Koller has determined the local anesthetic effect.
- Coca leaves carry 3 types of alkaloids.
- Ecgonine derivative (Cocaine, cinnamyl cocaine, α and β -truksillin)
- Tropine derivative (Tropa-cocaine, Valerin)
- Hygrin derivative (Hygrolin and Kuskohigrin)
- Only Ekgonin derivatives are commercially important.

COCAINUM, KOKAIN-Cocaine

- It is obtained from the leaves of *Erythroxylum coca* varieties.
- Or it can be obtained by semi-synthesis from Ekgonin derivatives obtained from plants.
- Cocaine; It is the methyl ester of the benzoyl-ecgonine.
- When hydrolyzed; it forms Ecgonine + Benzoic acid and Methyl alcohol.
- Cinnamyl Cocaine; It forms Ecgonine + Cinnamic acid and Methyl alcohol.
- And α -truksillin; Ekgonine + α and β form Truksillic acid and Methyl alcohol.

•**Cocaine, Cinnamil cocaine, α -Trukcillin**

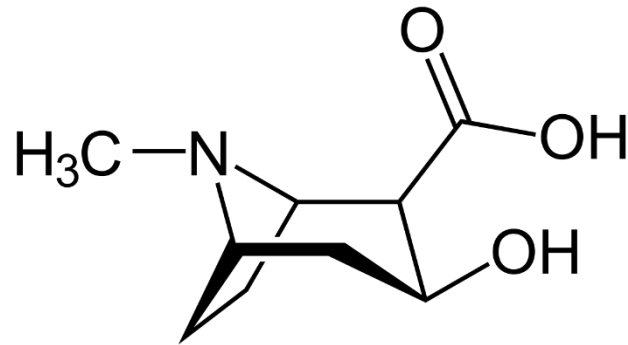
•**These mixed alkaloids are hydrolyzed (boiling with diluted HCl).**

•**Ecgonine HCl is formed, Benzoyl ecgonine, methylated (using Methyl iodide and Sodium methoxide in methanol), COCAINE**

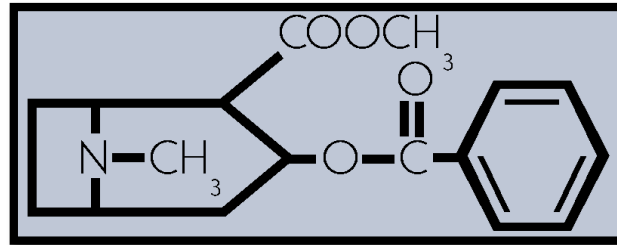
Cocaine; It is obtained by various patented methods on a large scale.

Sometimes, if the plant has more Ekgonin derivatives; first ester alkaloids are hydrolyzed to ecgonine. Cocaine is obtained from here first by ester reaction with methanol and then benzoic acid.

Cocaine; It has a psychomotor stimulating and strong habit potential. It reduces behaviors such as eating and sleeping.



Ekgonin



Benzoil-ekgoninin methly ester=kokain

Cocain HCl

It is the HCl salt of cocaine.

Colorless or white color

It is in the form of crystals or powder.

Cocaine base becomes volatile at 98 C. However, HCl salt becomes volatile at 195 C.

Due to the CNS stimulant properties of cocaine, it removes the effects of sedation and respiratory depression caused by narcotic analgesics.

It also increases the analgesic effect.

It is therefore used with Morphine or Methadone to relieve severe pain of cancer patients (Brompton Cocktail)

Approximately 6.5 million people in America use cocaine. (i.v. or subcutaneous injection or cocaine base smoking)

Inhalation of cocaine vapors causes a rapid and violent onset of euphoria.

"Crack" is a mixture that is drunk by adding Ammonium or Sodium Bicarbonate + water to Cocaine HCl.

It is effective when drunk for 7-10 seconds. Cocaine; created a model for synthetic local anesthetics. It is used as a local anesthetic in surgery.

Local anesthetic 10% solutions in 1-4% solutions (used in Ear, Nose and Throat operations)

Cocain

- Cocaine-type addiction and amphetamine-type addiction are similar in many ways.
- It causes euphoria (extreme joy) with its psychostimulant effect, increases resistance to fatigue, exertion, cold, hunger and insomnia. With this method of use, since cocaine entry into the body is limited, it does not cause social and personal harm. These people use cocaine in the form of cigarettes.

- Its euphoric effect is stronger than other psychoactive drugs (including heroin). When pure cocaine is snorted and snorted, it creates a pronounced and short-term joy (extreme joy) state, it has the characteristics of local anesthetics.
- It blocks the conduction and distribution of impulses in nerve fibers.
- It has the effect of increasing vitality, restlessness, physical and mental strength and reducing the feeling of fatigue.
- Cocaine addiction, like amphetamine addiction, has paranoid psychotic symptoms, aggressive (hostile, aggressive) and antisocial behavior. It makes strong psychological addiction. There is no tolerance and physical dependence. There is no question of withdrawal syndrome. It paralyzes in high doses.

It has a lethal effect of 1-2 grams in people who are not addicted. Symptoms of acute (sudden) poisoning appear in a very short time. Death can occur within 2-3 minutes. Restlessness, irritability, hyperactivity, depression, confusion, dry throat, dizziness, hallucinations are the main symptoms. Depression phase is seen after excessive reflex, passing out, increase in blood pressure, irregular breathing.

It causes CNS (Central Nervous System) depression, muscle paralysis, respiratory and circulatory failure, and loss of consciousness.

Withania somnifera
Ashwagandha
Indian Ginseng/ Winter Cherry

Solanaceae

The roots of the plant are used as sedative in India.

It is in the Pharmacopoeia of India

It grows in Asia, Africa and the Mediterranean, also found in Anatolia

Roots are mature

Alkaloid 4%

Tropanol, pseudotropanol, hygrin, cousohigrin, isopelletiers