Calabar bean , Faba Calabarica

Semen Physostigmatis

Physostigma venenosum

(Leguminosae)

Mature dried semen.

Trees up to 15 m.

Fruits are 15-18 cm and each carries 2-3 seeds.

Grows naturally near Nigeria and Cameroon .

Seeds are kidney shaped,

15-30 mm length, 10-15 width, quite hard, covered with a dark brownish testa.

Chemical composition;

0.2-0.3% alkaloid percentage.

Alkaloids exist in the seeds.

Physostigmine (eserine) (75 %), eseramine, isophysostigmine, geneserine, *N*-8-norphysostigmine, calabatine, calabacine are the alkaloids.

Usage;

- Causes myosis. Decreases intra-eye pressure. Used as atropine antidote.
- Usewd for Alzheimer's diseae.
- Eserine sulphate ophthalmic, used in glaucoma.

Glaucoma is a group of eye diseases which result in damage to the optic nerve and cause vision loss. The most common type is open-angle glaucoma with less common types including closed-angle glaucoma and normal-tension glaucoma.

Nux vomica, Semen Strychni, Kargabüken

Strychnos nux-vomica (Loganiaceae)

Grows naturally in the East of India, in Ceylon, North of Australia

Trees with 10-13 m height.

Used for poisoning animals since 16th century.

4-5 seeds take place in the orange like (in size) fruits.

Seeds have 2-2.5 cm diameter, 2-3 mm thickness, with a disc like shape.

Have some hairs which gives the plant its grey colour.

Inside of the seed is not filled, it’s empty. It consists of only endosperm and testa (seed coat that is usually hard). Cotiledone is not well developed.

Testa epiderm is locally woody and hair like.

Endosperm cell has tick walls and contain too much oil.

Contains 1.8-5.3% alkaloids.

Strychnine and brucine are the main alkaloids which are carbazole derivatives.

Also it contains minor alkaloids like α- colubrine, β

colubrine, icajine, 3-methoxy icajine, vomisine, novasine

and pseudostrychnin.

Strychnin is physiologically much more active than brucine.
Generally contains 1.23% strychnine and 1.55% brucine.

- Usage; Strychnine is central nervous system sitimulant. Formerly used as circulatory stimulant but due to its toxic effect it is only used as respiratory stimulant in some poisoning cases. It is an appetitizer like all the other bitter compounds.
- Used as dog and mouse poison.

The LD50 values for strychnine in animals

Organism	Route	LD50 (mg/kg)
Bird-wild	Oral	16
Cat	Intravenous	0.33
Cat	Oral	0.5
Dog	Intravenous	0.8
Dog	Subcutaneous	0.35
Dog	Oral	0.5
Duck	Oral	3.0
Mouse	Intraperitoneal	0.98
Mouse	Intravenous	0.41
Mouse	Oral	2.0
Mouse	Parenteral	1.06
Mouse	Subcutaneous	0.47
Pigeon	Oral	21.0
Quail	Oral	23.0
Rabbit	Intravenous	0.4
Rabbit	Oral	0.6
Rat	Oral	16.0
Rat	Intravenous	2.35

The other species containing strychnine:

Strychnos ignatii (Ignatius beans), Philipines, Vietnam. Fruits are larger than *S. nux-vomica* fruit and carries more seeds (nearly 30). Contains 2.5-3 % total alkaloid and half of itis strychnine.

S. gaultheriana, S. tiente, S. lucida, S. icaja are the other species.

Gelsemium

- *Gelsemium sempervirens* (*Gelsemium nitidum*) (Loganiacea)
- dried roots and rhizomes.
- American yellow jasmin
- Climber plant

- Drug 3-20 cm length, 3-30 mm diameter cylindirical shape.
- The outer surface of the rhizome is red-brown, inner side is yellow.
- Roots are smaller than rhizomes and carries cork layer.
- Mild odour and bitter taste.

Carries toxic alkaloids with different structure. Gelsemine is the most important alkaloid.

Gelsemicine is another toxic indole alkaloid.

Sempervirines (Oxindole derivatives)

11-methoxy, 21-oxo gelsemine

14-hydroxygelsemicine

Gelsedine

14-hydroxy gelsedine

Usage;

-Trigeminal neuralgy

-Migrain

Must be used carefully.

Anticancer activity studies are in progress.

Gelsemium elegans traditionally used for same purposes.