

ERGOT

Synonyms

Ergot; Rye Ergot; *Secale cornutum*; Spurred rye; Ergot of rye; Ergota.

Biological Source

Ergot is the dried sclerotium of a fungus, *Claviceps purpurea* Tulasne, belonging to family Clavicipitaceae, developing in the ovary of rye plant, *Secale cereale* (Family Poaceae).

Ergot should yield about 0.15% of the total alkaloids calculated as ergotoxine and water-soluble alkaloids equivalent to about 0.01% of ergonovine.

Chemical Constituents

A large number of alkaloids have been isolated from the Ergot. The most important alkaloids are ergonovine and ergotamine. On the basis of solubility in water the alkaloids are divided into two groups: water-soluble ergometrine (or ergonovine) group or water-insoluble (ergotamine and ergotoxine) groups as given hereunder:

Only the first group, ergometrine group, belongs to water-soluble compounds. Alkaloids of Group II and III are polypeptides in which lysergic acid or isolysergic acid is linked to amino acids. Alkaloids obtained from lysergic acid are physiologically active compounds. In the first group, for example, ergometrine alkaloids, lysergic acid or its isomer is linked to an amino alcohol.

The ergot alkaloids (ergolines) can also be divided into two classes (1) the clavine-type alkaloids, which are derivatives of 6,8-dimethyl-ergoline and (2) the lysergic acid derivatives, which are peptide alkaloids and contains the pharmacologically active alkaloids that characterize the ergot sclerotium (ergot). Each active alkaloid occurs with an inactive isomer involving isolysergic acid.

Chemical Tests

1. Ergot under UV light shows a red-coloured fluorescence.
2. Ergot powder is extracted with a mixture of CHCl_3 and sodium carbonate. The CHCl_3 layer is separated and a mixture of p-dimethylaminobenzaldehyde (0.1 g), H_2SO_4 (35%, v/v, 100 ml) and 5% ferric chloride (1.5 ml) is added. A deep blue colour is produced.

Uses

Ergot is oxytocic, vasoconstrictor and abortifacient and used to assist delivery and to reduce post-partum haemorrhage. Lysergic acid diethylamide (LSD-25), obtained by partial synthesis from lysergic acid, is a potent specific psychoto-mimetic. Ergometrine is oxytocic and used in delivery. It stimulates the tone of uterine muscles and prevents post-partum haemorrhage.

Only ergometrine produces an oxytocic effect, ergot-oxine and ergotamine having quite a different action. Ergometrine is soluble in water or in dilute alcohol. It is known as ergonovine. Ergotamine and the semisynthetic dihydroergotamine salts are used as specific analgesics for the treatment of migraine. Lysergic acid diethylamide (LSD-25), prepared by partial synthesis from lysergic acid, is a potent specific psychotomimetic.