

Santonin

Source: It is obtained from the dried unexpanded flower heads of *Artemisia cina* (Wormseed); (family: Compositae). *Artemisia cina*

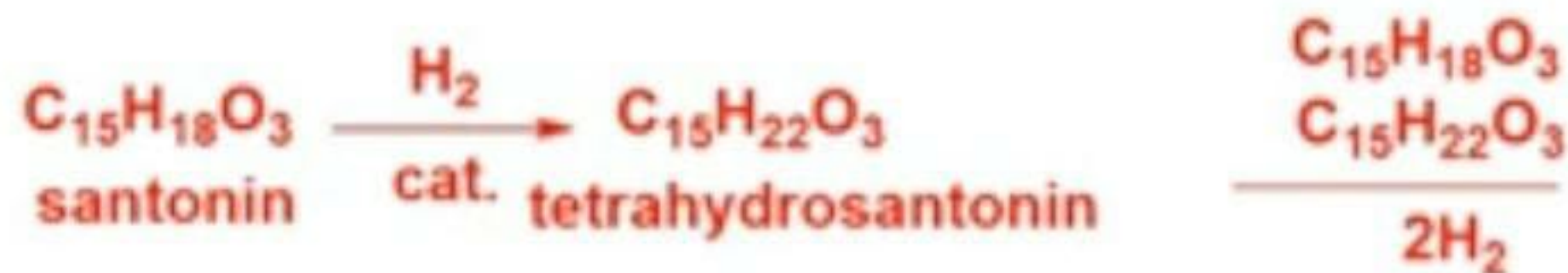
Uses:

1. It is mostly used as an anthelmintic (Nematodes).
2. It is very efficient in its action on round worms (e.g. *Ascaris*) in doses of 60 to 200 mg daily for 3 days; but shows less effect on the thread worms and none on taenia.
3. Due to its toxicity it is now replaced by other anthelmintics.

Structure Determination of Santonin (Chemical method)

- Elemental analysis shows that MF of santonin = $C_{15}H_{18}O_3$
- Santonin belongs to sesquiterpenoid class of terpenoids.
 - ✓ It contains three isoprene units joined head to tail
 - ✓ $DBE = x + 1 - y/2 = 16 - 09 = 07 (C_xH_yO_z)$

Hydrogenation of santonin forms tetrahydrosantonin.



- ✓ Santonin contains two C=C double bonds (DBE = 02).

Structure Determination of Santonin

DBE = 07

Two double bonds (02)

Lactone (02)

Keto (01)

Naphthalene skeleton (02)

Formation of 7-ethyl-1-methylnaphthalene

from santonin was achieved by two different ways.

✓ This suggests the presence of 7-ethyl-1-methylnaphthalene (hydrogenated form) skeleton in santonin.



Structure Determination of Santonin

DBE = 07

Two double bonds (02)

Nature of oxygen:

Presence of lactone group: Santonin dissolves in alkali to form the salt of the hydroxy acid, santonic acid.

- ✓ This indicates that santonin is a lactone (DBE = 02).
- ✓ IR spectra shows a carbonyl band at 1770 cm^{-1} , characteristic of saturated γ -lactone.

