



Antiscabious and Antipedicular Agents

Navneet F. Chauhan, Ph.D

Associate Professor,

Saraswati Institute of Pharmaceutical
Sciences, Gandhinagar

Antiscabious Agents

Scabicides (antiscabious agents) are compounds used to control the mite *Sarcoptes scabiei*, an organism that thrives under conditions of poor personal hygiene.

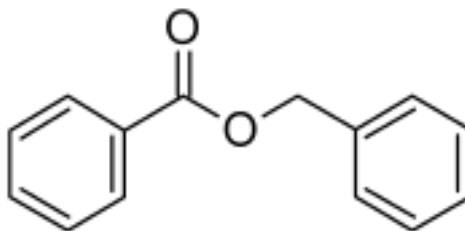
Antipedicular agents are used to eliminate head, body, and crab lice. Ideal scabicides and pediculicides must kill the adult parasites and destroy their eggs.

Lice are insects, while mites belong to the same family as spiders.

1. Benzyl Benzoate

Benzyl benzoate is a naturally occurring ester obtained from Peru balsam and other resins. It is also prepared synthetically from benzyl alcohol and benzoyl chloride.

The ester is a clear colorless liquid with a faint aromatic odor. It is insoluble in water but soluble in organic solvents.



Benzyl benzoate is an effective scabicide when **applied topically**.

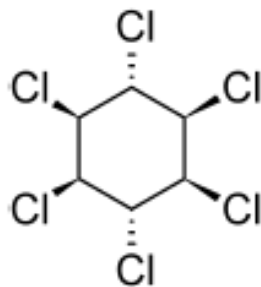
Immediate relief from itching probably results from a local anesthetic effect; however, a complete cure is frequently achieved with a single application of a 25% emulsion of benzyl benzoate in oleic acid, stabilized with triethanolamine.

This preparation has the additional advantage of being essentially odorless, non-staining, and non-irritating to the skin. It is applied topically as a lotion over the entire dampened body, except the face.

2. Lindane

Lindane is 1,2,3,4,5,6-hexachlorocyclohexane, or benzene hexachloride. This halogenated hydrocarbon is prepared by the chlorination of benzene.

The gamma isomer, present to 10% to 13% in the mixture, is responsible for the insecticidal activity. The gamma isomer may be separated by various extraction and chromatographic techniques.



Lindane occurs as a light buff to tan powder with a persistent musty odor, and it is bitter. It is insoluble in water but soluble in most organic solvents.

The action of lindane against insects is threefold: it is a direct contact poison, it has a fumigant effect, and it acts as a stomach poison.

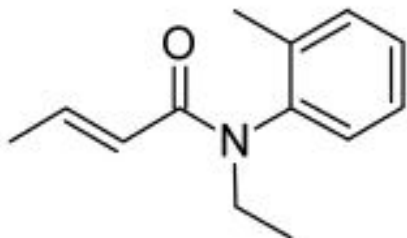
The effect of lindane on insects is similar to that of DDT. Its toxicity in humans is somewhat lower than that of DDT. Because of its lipid solubility properties, however, lindane when ingested tends to accumulate in the body.

Lindane is used locally as a cream, lotion, or shampoo for the treatment of scabies and pediculosis.

3. Crotamiton

N-Ethyl-N-(2-methylphenyl)-2-butenamide, or N-ethyl-ocrotonotoluidide, is a colorless, odorless oily liquid.

It is virtually insoluble in water but soluble in most organic solvents.



Crotamiton is available in 10% concentration in a lotion and a cream intended for the topical treatment of scabies.

Its antipruritic effect is probably because of a local anesthetic action.

3. Permethrin

Permethrin is 3-(2,2-Dichloroethyl)-2,2-dimethylcyclopropanecarboxylic acid (3-phenoxyphenyl)methyl ester

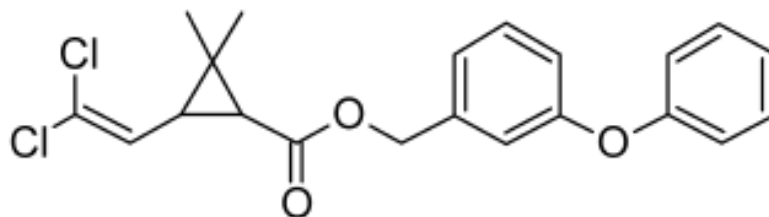
This synthetic pyrethrinoid compound is more stable chemically than most natural pyrethrins and is at least as active as an insecticide.

The commercial product is a mixture consisting of 60% trans and 40% cis racemic isomers.

It occurs as colorless to pale yellow low-melting crystals or as a pale yellow liquid and is insoluble in water but soluble in most organic solvents.

Permethrin exerts a lethal action against lice, ticks, mites, and fleas.

It acts on the nerve cell membranes of the parasites to disrupt sodium channel conductance. It is used as a pediculicide for the treatment of head lice.



A single application of a 1% solution effects cures in more than 99% of cases. The most frequent side effect is pruritus, which occurred in about 6% of the patients tested.