

Licyl – Anti-lice hair oil

Keeps lice away

The human head lice (*Pediculus humanus capitis*) attach to the scalp and use needle-like feeding tubes to suck blood. It is about 2-3 mm in length. In a life span of about one month the female louse produces 7 to 10 eggs "nits" per day. The nits are attached firmly to the hair shaft region close to the scalp. These nits, which resemble dandruff, are attached with a glue-like, water-insoluble substance that makes them difficult to remove. After six to 10 days, the nits hatch as nymphs and become adults in 10 days. The head lice bites are painless, but their saliva and feces usually cause an itching allergic reaction.

Who gets it?

Children aged 3-10 years in preschool, elementary school, and day-care centers are most likely to have lice

- All socioeconomic classes are affected
- Girls are more commonly infested

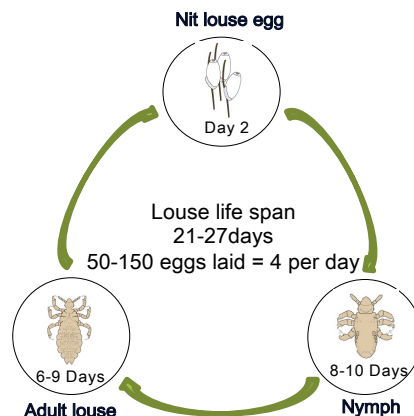
Transmission of head-lice is through direct head-to-head contact, sharing pillows, caps, headphones, and combs/brushes. It is detected by nits, droppings or live lice on the pillow or cloths.

Symptoms

Generally the lice infestations are asymptomatic

- Itching of the scalp, neck, and behind the ears are some symptoms
- Intense scratching may lead to secondary skin infections and associated enlargement of the lymph nodes of the neck and scalp regions.

Treatment includes usage of topical chemical insecticides (DDT, Permethrin etc.). Pediculicides used as topical therapy are nerve toxins designed to interfere with the nervous system of lice. These are neurotoxic to children as well. Allergic reactions such as skin, eye and respiratory irritation are common. Resistance is increasing with synthetic topical treatments. The choice of treatment is therefore directed towards herbal alternatives. These are safe and effective with least chances for resistance and re-infestation.



Ingredients (each 5ml contains oil of)

Nimba (<i>Azadirachta indica</i>)	0.1mg
Tailapatra (<i>Eucalyptus globulus</i>)	0.6mg
Jaitun (<i>Olea europaea</i>)	0.6mg
Narikel (<i>Cocos nucifera</i>)	1.0mg

Method of use: Apply on the scalp, allow over night. Bathe and comb off the lice next morning. Apply alternate days for complete eradication.

Licyl: Possible mechanism of action



- Licyl inhibits the pathway of insect growth regulator (IGR's).
- It disrupts molting of insects by inhibiting the biosynthesis or metabolism of ecdysone, the juvenile molting hormone.
- It also works on the nerve cells of the insects through inhibition of GABA receptors.
- It uncouples mitochondrial oxidative phosphorylation, by inhibiting the respiratory chain of the lice. It also decreases intramitochondrial levels of acetyl Co and acid-soluble Co esters and reduces the mitochondrial ATP content.

Pharmacological Activity of Ingredients

Nimba (*Azadirachta indica*): Neem is well known pesticide in the ancient literature. Neem oil shows toxicity to fish like tilapia and carp, with an LC50 of 1124.6 and 302.7 ppm respectively. It also showed acute toxicity in rats and rabbits with LD50 of 14 ml/kg and 24 ml/kg respectively. Mechanistic investigations indicate that neem oil uncouples mitochondrial oxidative phosphorylation, thus inhibiting the respiratory chain. It also decreases intramitochondrial levels of acetyl CoA and acid-soluble CoA esters and reduces the mitochondrial ATP content.

Azadirachtin, a nortriterpenoid belonging to the class lemonoids is insecticidal, fungicidal and bactericidal which works by inhibiting insect growth regulator pathway.



Tailapatra (*Eucalyptus globulus*): It consists of monoterpenoids [1,8-cineole, l-phellandrene, (-)-alpha-pinene, 2-beta-pinene, trans-pinocarveol, gamma-terpinene, and 1-alpha-terpineol]. These components are found to be effective against eggs and female head lice. It has proved to be safe alternative for permethrin resistant head lice.



Jaitun (*Olea europaea*): It is a rich source of mono-unsaturated fats which has anti-inflammatory property. The anti-inflammatory properties of olive oil have been attributed to a component found in premium oils known as oleocanthal. The fat components are precursors of important hormones and constitute the vehicle for the absorption of liposoluble vitamins. It is also rich in polyphenols which act as free radical scavengers to help repair cellular damage.



Narikel (*Cocos nucifera*): The health benefits of coconut oil include hair care, skin care, stress relief and bone strength, which are attributed to the presence of lauric acid, capric acid and caprylic acid. It is very soothing and hence it helps in removing stress. It acts as an effective moisturizer on all types of skin. It also delays wrinkles and sagging of skin. It contains antibacterial and antiseptic properties which help to prevent skin infections.

