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# Insects That Cause Myiasis

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**Abstract :**
The study included the knowledge myiasis that affect animals, the cause of some diseases of humans, the types of insects that cause it, knowing the pathological signs that occur because of it, and knowing the methods of treatment and prevention of myiasis

**Keywords**: worms, insects

**Introduction**:
Myiasis is defined as the infestation of humans or animals by the larvae of Diptera insects and flies are one of the most common insects that cause myiasis, and it is responsible for great economic losses in animal husbandry, including reduced meat , milk production ,weight and fertility problems (Hall and Wall, 1995 ; Otranto and Domenico, 2001), on the Although myiasis usually represents a much bigger problem for animals, also a relatively frequent disease for humans, especially in humid areas where flies grow, causing various diseases of humans that require medical attention to surgically remove parasites. Human myiasis spreads in the poor countries of the world. Poor hygiene and low social status And economics is one of the most important factors in acquiring myiasis (John *et al.,* 2006). Depending on the relationships between the host and parasite, myiasis can be classified into obligatory, facultative, and unintentional intrusion, as the species that cause obligatory myiasis require a live host as they develop, while those that cause facultative myiasis sometimes lay eggs or larvae. On live hosts and usually develop on decomposing matter such as Calliphoridae, unintentional extrusion occurs when human or animal larvae ingest maggot larvae. The larvae may die or survive, such as the larvae of *Musca domestica* and latrine flies (Namaz and Fallahzadeh, 2009), and facultative myiasis can be classified into primary, secondary and tertiary myiasis, and can be classified according to the anatomical position of the larvae in the host cutaneous, infective, intestinal, Ocular, oral, urinary, genital, in addition to myiasis that affects the nervous system. The larvae may infect dead tissue or live tissue in different locations of the skin through open wounds, causing painful ulcers or ulcers resembling boils that can persist for a long time and some may enter the body through Through the eyes causes severe irritation and or through the ears causes unpleasant secretions as the larvae are located in the middle ear and the larvae may reach the brain and the larvae can reach the stomach or intestines when swallowed with food and cause the occurrence of gastric or intestinal myiasis (Kuria and Oyedeji, 2020).

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Phamilly :Calliphoridae
Known as Blowflies, they are large-sized flies with metallic colors such as green, blue and scarlet. The number of their species is more than 1200 species. They suck the blood of humans and animals that live in burrows (Scholl *et al*., 2009), the most important of which is
Subfamily: Cochliomyia and Subfamily: Chrysomya, and its most important genuc *Challiphora* the screwworm flies blue flies are attracted to carrion and feces and may be found on rotting fruits in order to lay eggs, the most important of which are *C. vomitoria* and *C. vicina* , the family name means beuty bearer , blow flies carry 2000,00 species bacteria externally and internally , thy can carry typhoid , cholera , anthrax , leishmanias and can cause secondary and tertiary myiasis of human skin, but these flies are important in forensic significance in the decay and recycling of dead animals (Whitworth and Terry, 2010) .
*Lucillia spp*. Green flies are attracted to slaughterhouse waste, causing what is known as the fly strike on sheep. Sometimes females lay their eggs on carcasses, in wounds, and on sheep wool contaminated with urine and feces Mooreno *et al*., 2019).
*Cochliomyia sp*. It is very similar to the screw fly, which was controlled in America using the male sterilization technique and its release, which led to North America being free of it (Mooreno *et al*., 2019).
*Chrysomya bezziana :* (Screw worm)
Recorded on sheep, they are attracted to the wounds of live animals. The female lays eggs around the wounds. The eggs hatch into larvae that enter the wound and begin to devour the tissues of the animal

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or human. The wound grows with the large size of the larvae and may lead to the death of the infected animals, the last larval age falls in the soil and the larva turns into a virgin and then The adult insect comes out, and the adults can be identified as having a metallic green or blue color with a yellow face that feeds on decomposing organic matter, while the larvae feed on living tissues (Mjr *et al*., 2014)
Family: Sarcophajidae :
Similar to the house fly, but its size is twice the size of the house fly. There are three black stripes on the chest. Females give birth to larvae on feces or carrion. Some live on wounds and dead animals or parasitize in human tissues. Some meat flies larvae are parasites in Orthoptera and adults feed on animal fluids. The number of their species is 1000 species (Pape *et al*., 2010), the most important of which is *Sarcophaga haemorrhoidalis,* which multiplies in carrion and fecal matter.
As for the type *Wohfahrtia magnifica*, the striking fly attacks desert animals and is characterized by the presence of regular black spots in the abdomen area (Pape and Thapson, 2013) .

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**Myiasis flies :**
The adult insects are large and resemble bees, their mouth parts are relics and their eyes are small, the larvae are huge, obligatory parasitism(Solomon, 2016). There are a number of families of maggots, the most important of which are:
**Family : Dermatobia**
The most important species*, Dermatobia hominis*, is a large blue insect with a yellow head and a feathery arista
***D. hominis* life cycle:**
Females lay eggs on the chest of arthropod legs that suck blood like mosquitoes and ticks. When mosquitoes or ticks settle on animals or humans, and because of the heat when they are in contact with them, the eggs hatch and the larvae come out and burrow the skin quickly and settle in the tissues under the skin. The shape of the larva changes with age and its size increases and its shape is oval and has Spines, the larval age is 5-12 days, then the larvae emerge and fall to the ground to be excused. The duration of the pupa is 3-4 weeks, then the adults emerge (Solomon, 2016).
**Medical and veterinary importance *D. hominis***
These insects cause the appearance of boils containing larvae. Cases are treated by removing the larvae by pressing on the boils, and sometimes 1% lidocaine injections at 2 ml per node are used to paralyze the larva to facilitate extraction.
**Family: Osteridae**
Are the bot flies ,It feeds on living and dead animal tissues and the larvae of their species. It is of importance in forensic medicine. It includes 200 species that show a high degree of specialization on the host and its life cycle is complicated due to its long-term survival inside the host. The most important type is *Osterus ovis*. Females give birth to larvae at the animal's nostrils, so the animals try to lower their head down to escape , usually flattened front to back. From the insect, the larvae go to the cavities of the head and remain for 12 months, then return to the nose and fall on the soil when the infected animal sneezes and become a virgin for a period of two months (Hart and Klesely, 2012) .
**Medical importance *O.ovis***
Its known for its parasitic predation and damage to sheep , deer , goats and som tim cattle ,Sheep behave in a crazy way, rubbing their nose, which leads to the animal's weakness and emaciation.
**Family: Gastrophilidae**
The most important of them is *Gastrophillus intestinalis,* large, hairy bumblebee-like insects with reduced mouth parts and an elongated egg-laying machine whose larvae parasitize on farm animals, especially horses and donkeys.
**Life cycle of *G. intestinalis***
Females lay eggs on the hair of the front legs of the animal. The eggs are distinguished by the presence of rows of thorns. The eggs hatch after several days. When licked by the tongue, the larvae stick to it and then to the pharynx and esophagus and reach the stomach. The larvae feed in the stomach for a period of up to a year. In spring, it is not possible for 3-5 weeks, the full husk is released after two months, the adults live for a short time (Gun *et al*., 2012) .
**Medical importance *G. intestinalis***
The presence of adult insects repels animals and the presence of thorns around the larvae causes mucous membranes and ulceration, and the presence of a large number of larvae causes blockage of the animal's stomach.

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**treatment**:
-Extraction of larvae from the animal's stomach
Putting repellents to repel flies around animals
Combing animals to remove eggs and small larvae

**Family : Hypodermatidae**

The most important types are *H. Bovis* and *H. lineatum*, large insects whose body is covered with thick hair. The color of the insect is black with yellow stripes on the chest and abdomen. The color of the larvae is white, containing thorns, the length of the larva is 25-28 mm( Boe *et al*., 2011).

**Life cycle of *H. lineatum***

Insects lay eggs on the rear parts of the animal, especially the legs. The eggs hatch into small larvae capable of penetrating the animal's skin through the hair follicles. They begin to move inside the animal's body until they reach the back, where boils appear when the larva completes its growth and emerges to be impossible and the duration of the generation is a year( Pape *et al*., 2010 ).

**Medical importance *H. lineatum***

The presence of larvae in the bodies of animals affects the production of meat and milk and usually causes severe itching and the movement of the larvae can be felt under the skin.

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**Family: Hippoboscidae**

External parasites that parasitize on birds and mammals. The body is leathery. Its mouth parts are modified to absorb blood in both sexes. The legs end with claws for attachment. The wings are long, if any, and the veins are prominent. The female is giving birth. Parasitism occurs quickly. About 200 species are recorded in the world, most of which parasitize birds (Huston, 1984) the most important genera Hippoboscidae It is *Melophagus* and the most important type is *M. ovinus*, wingless, parasitizing on sheep, reddish-brown in color, with a small head, strong legs and claws. It is an external parasite that lives in sheep's wool. It is usually found on the neck, shoulders and abdomen(Nelson and Bainbogh, 2004). The length of adults ranges from 4-6 mm. It produces 10-20 larvae throughout its life. Each time a single larva is produced, it stays internally and feeds on the secretions of the milk gland in the womb of the female, after which the pupal stage begins from 19-23 days in summer and 20-36 days in winter. As for adults, they live 7-10 days. The larvae can be killed with pyrethrin, but the virgin resists. Treatment, and the genus Hippobosa, the most important of which is H. equine, which affects horses and donkeys (Bo *et al*., 2011) .

**life cycle *H. equine***

Males and females feed on blood. Females give birth to fully-grown larvae that turn into a virgin directly in the soil. They give birth to 15 larvae of 4-5 months of age.

**Medical importance *H. equine***

Harassment of infected animals and affects their production as well as transmitting pathogens to the animal and it is combated by using repellents, washing and cleaning the animal from time to time, disinfecting the barns with chemical pesticides.

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