

Evaluation of the therapeutic effect of mixture of aqueous extract of *Scrophularia striata* and *Nicotianatabacum* plants on the excretion of myiasis producing fly larvae (Schiff)

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Abstract

Introduction: Myiasis in livestock and humans is one of the most common larvae that affects the upper part and other parts of the body. This disease is caused by the presence of the larvae of *Oestrus ovis* and other productive flies and can be located in places such as natural cavities of the body such as eyes, ears and sinuses and if left untreated, it can have irreparable consequences, especially for humans. Due to the presence of nomads who travel with their families in different parts of the country, it is very necessary to create a comfortable, low-cost and fast-acting treatment for this foreign parasite. **Research materials and methods:** After examining and confirming the nature of 80 larvae, the two larvae were placed on a piece of square cut tissue 5 cm long, 5 cm long and 5cm wide and 2 cm high from the Nasopharyngeal of slaughtered sheep. In both plants, after collection, it entered the extraction stage. Extraction was performed in the usual way and it was divided into four mixtures of aqueous tobacco extract, aqueous *Scrophularia striata* extract, a mixture of tobacco extracts and *Scrophularia striata* in equal amounts and the control group. The effect of parasiticide was investigated by immersion in the desired extract. **Findings:** Aqueous tobacco extract showed a good positive result in treatment after three days of the experimental process and on the third day we witnessed complete separation of the larvae and a mixture of both extracts was obtained simultaneously with the tobacco extract after three days and *Scrophularia striata* extract was able to do this in 5 days and in our control group, until the 12th day and until complete corruption of the samples, no isolation was done. **Conclusion:** It can be concluded that the aqueous extract of *Scrophularia striata* and *Nicotianatabacum* is a low-cost, low-risk and organic way to treat myiasis larvae in humans and animals. The perfect cure for this annoying parasite in humans that can be a complete treatment for this annoying parasite in humans in case of contact of this fluid with the larvae attached to different parts of human body such as Nasopharyngeal and ear mucosa.

Keywords: Myiasis, Schiff, Herbs, *Scrophularia striata*, Tobacco

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Introduction:

Livestock and animal husbandry have long been popular in various societies and in addition to profits for the farmer has increased the production of other industries such as clothing, protein and dairy products. In some parts of Iran, due to the existence of traditional texture, animal husbandry is still practiced in a traditional way and with old methods, as a result, due to the antiquity of these animal husbandry, in addition to the need to address the health issues of livestock, livestock farmers should also be concerned about their own health.

One of the problems that many livestock farmers face in the hot seasons of the year is myiasis or Schiff, which due to this problem they do not take care of their animals for a few days, this issue can cause a lot of damage to the livestock farmer.

One of the damages that this disease can cause to the livestock farmer is that the sheep have a cough and lung infections that cause the misuse of antibiotics and increase antibiotic resistance. This parasite may be implanted in the lung tissue after entering the body through the respiratory tract in cattle and cause infection and eventually death. If left untreated, it can increase the number of productive flies in the herd area and infect more, resulting in more damage and also increase the chances of human infection with this parasite.

Unfortunately, this parasite is not taken very seriously in humans, but if infected with this parasite and left untreated, it may cause irreversible complications such as damage to the vocal cords, larynx and throat due to inflammation caused by the parasite and blindness and deafness. Warm seasons of the year, such as late spring, summer and early autumn, the prevalence of this parasite is very high, and despite the cases to prevent infection, due to the heat, most livestock farmers do not comply with these issues and the probability of contracting this parasite is multiplied.

The way to treat it in cattle is to use oils such as paraffin oil or drugs such as Ivermectin topically or by separating the larvae using forceps, but in humans the use of these drugs and methods is dangerous, so the possibility of not treating this problem in humans with these methods is a bit far-fetched and unlikely.

Introduction of the disease agent:

The cause of myiasis is flies of two families (Calliphoridae) (Oestridae) that have different genera that have almost the same pathogenic mechanism in all genera of this family. In terms of life cycle, this parasite can be said to be divided into three categories in terms of relationship between host and parasite: Obligatory, Accidental and Facultative that in an obligatory myiasis, the fly larvae needs a living host like an animal to fully evolve and in a random myiasis, the parasite's eggs may enter the tissue of animal or human tissues quite randomly, and in the Facultative one, the parasite chooses to grow on necrotic tissue or living tissue (Pape, 2001).

Introducing the *Scrophularia striata* (*Scrophularia striata*):

This plant belongs to the family of herbaceous flowering plants and monkey flower genus that grows well in western regions of Iran such as Ilam, Kermanshah and Kurdistan (Ghashghaii, 2017). It is usually known for its strong antibacterial properties in the society among the scientific community. Its decoction has been used in traditional treatments for many allergies, bacterial infections, rheumatism, and tuberculosis (Schinella, 2002). The stems of this plant are square and a cluster is formed at its end (Monsef-Esfahani, 2010).

Introduction of *Nicotianatabacum*:

It is a plant from the family of herbaceous plants that has broad leaves and grows as an annual, its main use is used as a base for tobacco production around the world (Ren, 2001). Many alkaloids are present in this plant such as Riotin (Van Der Watt, 2001) and Anabazin (Jacob, 1999) whose antibacterial and anti-parasitic properties have been proven for their external parasites.

Research materials and methods:

One of the leaves of *N.tabacum* plant with a volume of 270 g was ordered from Fars province and *S. striata* plant was collected in the amount of 200 g from the Medicinal Plants Center of Ilam University. After drying, 100 g of each plant was pulverized by milling machine and transferred to a suitable

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Erlenmeyer flask. About 1 liter of distilled water was added to it and after mixing, it was heated using a heater to reach boiling point. It was kept in a boiling state for 20 minutes and then the extract was separated from the pulp with a filter paper. Then, with the help of a rotary machine, the extract was slightly concentrated and then transferred to a suitable container with a lid and a cool, dark place (Ghorbani, 2020).

Nasopharyngeal specimens were sampled from the heads of slaughtered sheep in the slaughterhouse and placed in a petri dish and transported to the veterinary clinic of Ilam University using a cold transfer chain. After examining the sheep of the herds in Dehloran and Ilam cities, 80 larvae of myiasis were removed from the nose area of these animals with the help of pliers and transferred to the clinic using petri dish. The four groups were divided into control, treatment with extract (*N.tabacum*) and treatment with extract (*S. striata*) and treatment with a mixture of both extracts. About 2 hours before the larvae were placed on the meat samples, they were released from the cold chain and after the larvae reached the ambient temperature, the parasites were placed on meat samples with the help of pliers and placed in an incubator at a temperature of 37 degrees and were exposed to the desired substances three times a day for 1 minute. The extracts were prepared by taking 5 cc of the desired extract with a syringe and pouring it on the larvae and calculating the time for 1 minute by means of a stopwatch. After the desired time, using a pair of pliers, transfer the meat samples to a clean container and again was incubated.

Findings:

After 3 days of treatment, a mixture of extracts and aqueous extract of tobacco groups simultaneously caused death and separation of the larvae from the meat sample, and the next group, which resulted after 5 days, was *Scrophularia striata* extract, after passing 5 days, signs of separation of the larvae from the samples were evident. The larvae in the control group were fully fed for 12 days and were completely attached to the surface of the meat.

Discussion and conclusion:

In 2012, a study examined the parasitic effect of *N.tabacum* on leeches (Bahmani, 2012) which proved that the leaf extract of this plant has anti-parasitic properties. In a study (Weber, 2019) conducted in 2019 entitled Anti-parasitic properties of leaf extracts derived from selected species of *Nicotiana* and *Nicotianatabacum*, its anti-parasitic effect on foreign parasites was investigated and confirmed. In a study (Rakhshandehroo, 2015) the effect of tobacco on nematode larvae in the laboratory was investigated and its anti-parasitic effect was confirmed. In a study (Ileke, 2015) the effect of the tobacco plant as an insecticide was confirmed. In a study (Nokhodi, 2014) the anti-parasitic effect of the *Scrophularia striata* on protozoa was examined and confirmed. In addition to the anti-parasitic properties, the *Scrophularia striata* also has many antibacterial properties, which was confirmed in a study by Sharafati in 2014. In research on the antibacterial and antioxidant effect of *Scrophularia striata*, these effects were confirmed in study by Safavi in 2012.

It can be concluded that due to the anti-parasitic properties of these two plants as well as the antibacterial properties of the *Scrophularia striata*. By using a mixture of these two plants, this disease which causes a lot of financial losses to livestock farmers every year can be better managed and at a lower cost. This compound can be used as a disinfectant solution to treat wounds infected with myiasis larvae or as a mouthwash solution to treat pharyngeal myiasis and at lower concentrations as a treatment for patient with genital myiasis.

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