



## Information About the Causes of Goat Monieziosis

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**Abstract:** It is known that moniesiosis is a deadly cestodosis that frequently manifests as an acute form and results in mortality in goats. From the previously recognized and widely distributed monieziosis pathogen types *Moniezia expansa* and *M. benedeni* are two new species of moniesia that have been identified. They differ from them in that the strobila has a strong structure, the scolex is large and thus the suckers are large, the segment shape is different, there is accelerated growth in both the transverse and longitudinal directions, puberty begins earlier, and the body is significantly shorter.

**Keywords:** Moniezioz, *Moniezia expansa*, *M. benedeni*, *Moniezia* species, skoleks, strobila.

### Introduction

*Moniesia* have developed in a dioxenous manner. Small oribatid (dirt) mites, which belong to the arachnoid class of arthropods, serve as their intermediate hosts. More than a dozen of these species have been identified as intermediate hosts of moniesia inside the borders of Uzbekistan. Azimov, S. A. (1974). Arthropods that consume humus, earth mites may be found in all plains, desert grasslands, and subalpine and mountainous environments. Because of this, monieziosis is a widespread illness around the world, although it is particularly prevalent in Kazakhstan and Central Asia.

There are 14 species of *Moniezia* known to science. In the CIS, it was discovered that some of them parasitized sheep, goats, and cattle. These included *Moniezia expansa* (Rudolphi, 1810), *Moniezia benedeni* (Moniez, 1879), *Moniezia autumnalia* (Kuznetsov, 1967), and *Moniezia alba* (Perroncito). The remaining ten species of moniesia were discovered in a few nations on the continents of Europe and America, as well as in some wild mammals (deer, kosul, and other animals) that live in Kazakhstan.

Goats were observed to be parasitized by *M. expansa* and *M. benedeni* in several locations of Uzbekistan between 1963 and 1975 (I.Kh. Irgashev, 1963, 1973, M.A. Sultonov et al., 1975). Aside from them, *M. autumnalia* was found in goats in the hilly areas of the Namangan region, as demonstrated by S. Qurbanov (1975), who could not provide an explanation for the physical characteristics that set it apart from other forms of moniesia. This species is different from moniesia *M. expansa* and *M. benedeni* in that it has reticulate uterus, strobila that ranges in length from 60 to 250 cm, and thin (6–8 mm) joints that are long relative to their breadth (M.I. Kuznetsov, 1967). and according to E.M. Matevosyan and S.O. Movsesyan (1927), its eggs contain ten to twelve sides that differ significantly.

Preliminary scientific data about the species makeup of the agents causing sheep moniesiosis in Uzbekistan were released in the 2013 issue of *Zooveterinaria* magazine (B. Salimova and

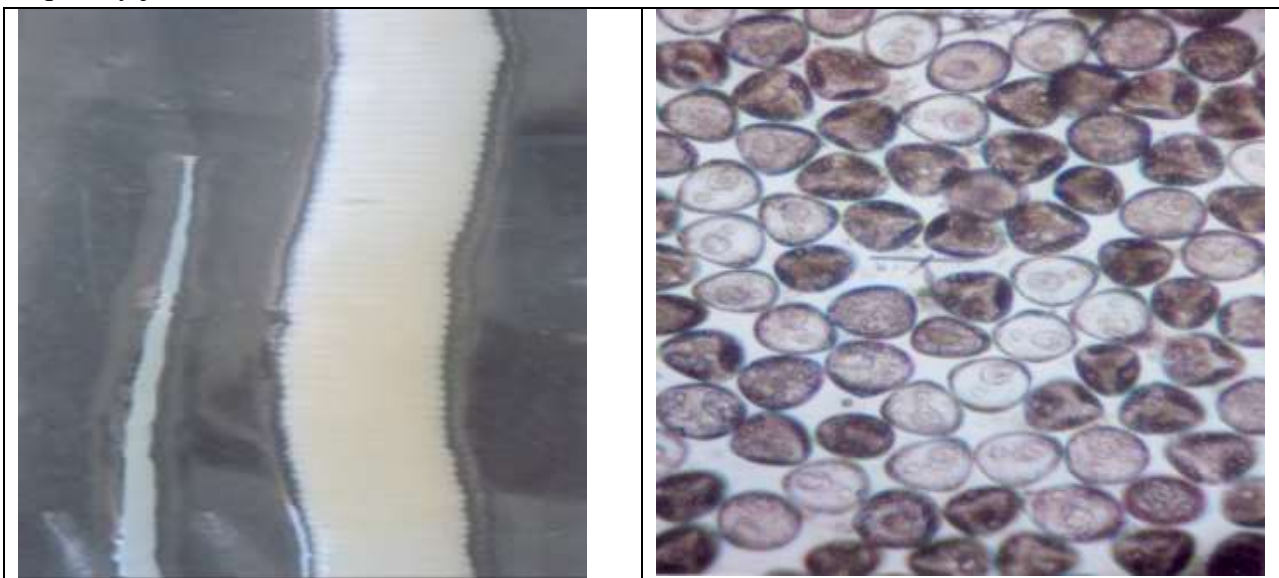
colleagues). Beyond *M. benedeni* and *M. expansa*, which were discovered between 1998 and 2005, more causal agents of monieziosis were discovered. These organisms differ markedly in their morphology. The current issue of goat moniesiosis, which has theoretical and practical significance, has to be studied in this article.

**Methodology.** Research materials and techniques were derived from cestodes discovered in the small intestine sections of dead and killed goats in the mountainous Kashkadarya areas in 2022–2023, as well as from their severed joints with animal manure. The significant morphological features of the collected cestodes and their joints were studied, and the resulting scientific data were compared with the data from the literature on this topic. Through specific observations, pertinent data on the epizootological significance of moniesiosis for goats was acquired.

**Result and discussion.** Upon dissecting the deceased or forcefully killed goats, it was found that the small intestines were tightly packed with gas and cestodes, or had even burst, causing monesia and other cestodes to gather in one area and obstructing the flow of food material. Upon doing a thorough helminthological dissection to study each juvenile goat's gut, we discovered that 6–14 copies of cestodes were parasitized there. Six tested goats had a total of 56 copies of cestodes discovered in their small intestine. They were used to create 18 copies of *M. expansa*, 15 copies of *M. benedeni*, 10 copies of *Moniezia* species, 3 copies of *Thysaniezia gardi* (Moniez, 1879), and 10 copies of *Avitellina* species. Of these, *M. expansa* and *M. benedeni* are the most deadly due to their very broad strobila, while the latter's strobila are much longer and wider than those of other cestode species.

Findings from helminthoscopy revealed that cestodes were present in the manure of 14 of the 76 goats analyzed. It follows that 18.4% of them had a cestode infection overall. We discovered that it was infected with mixed cestodes of which 5 (6.5%) were linked to *M. expansa*, 4 (5.2%) to *M. benedeni*, and 1 (1.7%) to *Moniezia* species.

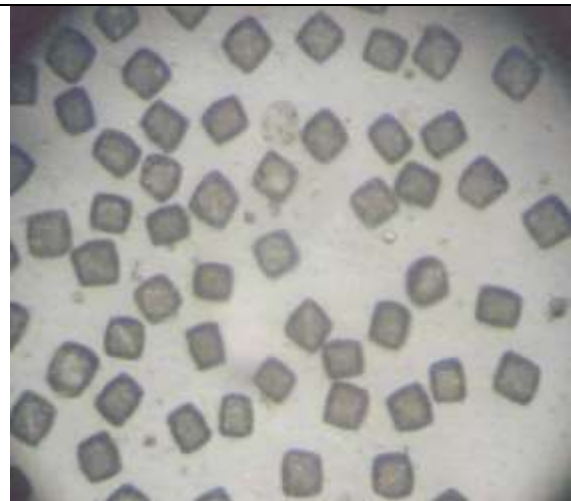
In summary, the physical characteristics of moniesia in goats include the following: the strobila length of *M. expansa* cestodes ranges from 1 m 65 cm to 3 m 40 cm, and the joint width ranges from 7-11 mm to 11-12 mm. The scolex is a 0.70 x 0.80 mm (0.80-90 mm) diameter and is tiny, almost spherical. There is very little neck—no more than 5 or 6 mm. It causes the joints to expand relatively consistently, quickly in breadth, and slowly in length. The strobila has a white, milky hue and is slightly thick. An endless number of eggs, mostly three-sided, six-looped oncospheres with a pear-shaped mechanism, are contained in the uterus, which resembles a net. On the left and right sides of the joints, there are two sections to the genital entrance. The strobila of the slow-moving cestode are frequently joined between 170.0 and 260.0 cm.



**Figure 1.** Scolex and terminal joints of *M. expansa* (original)

**Figure 2.** Seeds of *M. expansa* (original copy)

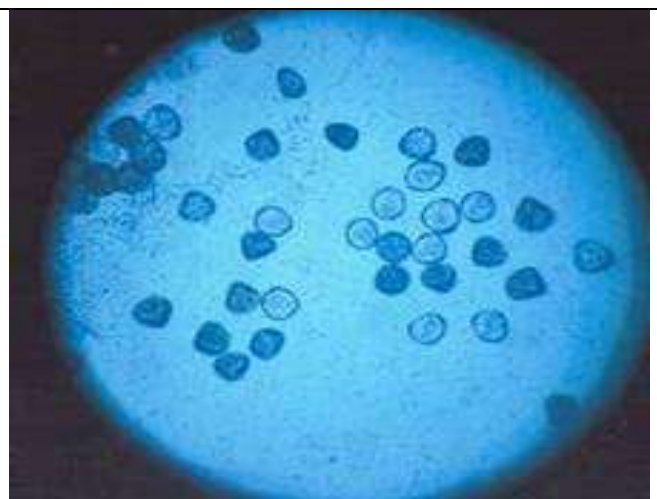
According to research, the strobila of *M. benedeni* range in length from 1 m to 3 m and have a milky or occasionally yellowish tint. The scolex is tiny, with a diameter that is occasionally lower than that of *M. expansa*, but it has a nearly spherical form. The neck is quite short, and the joints begin fast from the neck and widen gradually, reaching a width of 21–23 mm and having a somewhat rounded shape. Like in *M. expansa*, there are two genital apertures, one on each side of the joint. Often four-sided, but occasionally five- or six-sided, eggs have a pear-shaped machinery, an oncosphere, and a uterus that resembles a net. Its growth is not as rapid as that of *M. expansa*.



**Figure 3.** *M. benedeni* joints (original copy)

**Figure 4.** Seeds of *M. benedeni* (original copy)

*Moniezia species.* The strobila is 1 m 60 cm, is white-milky, and has a thick structure. The scolex is smaller and the neck is shorter. Similar to *M. expansa* and *M. benedeni*, articulation starts out fast with a short neck. However, the joints start off expanding swiftly, then they start to narrow somewhat, becoming the shape of a chain, and finally the junction narrows still further to become a stationary point. Within the uterus of this cestode, immature eggs were discovered. This cestode, which has many physical traits with the genus *Moniezia*, is distinguished from other moniezias by the quick rise in joint width at first, occurring in the 8–9 mm broad middle joints, which subsequently contract to 5 mm. Their following joints were found to have smaller eggs instead of cocoons, despite the fact that they resembled avitellinas in form.



**Figure 5.** The joints of *M. species* (original copy)

**Fig. 6.** Seeds of *M. species* (original copy)

*Species of moniezia* big teats (0.50 x 0.62 mm) and a very big scolex (1.80 x 1.74 cm) are characteristics of the adult, white strobila, measuring 1 m 14 cm and 1 m 37 cm. The neck is only 5–6 inches long. Under a microscope, the joints originating from it have sharper edges than those of *M. expandans* and *M. bendeni*, but they are also more narrower (0.38-0.42 mm). The joints located within 10 cm of the neck have grown extremely quickly and resemble leaves. They are tall in comparison to their breadth (1.26 x 1.06 mm), which is comparable to the *M. expansa* joints at this distance, which are longer (0.12 mm) than their width (1.42 mm). joints that are nearly square (1.50 mm wide, 1.24 mm long), very short (24 cm long), and have genital holes on either side. Subsequently, the joints developed a chain-like hue. The final joints were immature, with a 5 mm width and a 3 mm length increase. In goats, we discovered a novel kind of cestode.

Thus, we discovered that novel forms of monieziosis agents—aside from *M. expansa* and *M. bendeni*—paralyze goats as well as sheep. Several physical indicators, as well as the body's speed and brevity, set them apart from other moniesiosis pathogens that have been identified thus far.

**Conclusion.** It was discovered that monieziosis is a deadly cestodosis that strikes goats, resulting in an acute course that ends in death. It was discovered that this animal harbored a novel species of moniesia, distinct from the widely recognized and prevalent diseases like *M. benedeni* and *M. expansa*. They can be identified by their thick strobila structure, scolex and, consequently, the size of the suckers, the morphology of the joints that emerge from the neck, their rapid growth based on width and height, their short stature and rapid maturation, and their varying morphology.

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