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Morphological Diagnosis for Some Eggs of Gastrointestinal Nematodes from Sheep

ABSTRACT

The current research aimed to study the morphological aspects of eggs of nematodes that parasitic on Awasi sheep and make a comparison with the existing data in specialized references. The eggs were isolated and collected from the nematodes female from the gastrointestinal mass of the sheep. The morphological appearance and measurements of eggs were made with microscope. The results showed the eggs from the following species: *Haemonchus contortus, Marshallagia marshalli, Oesophagostomum columbianum* and *Trichostrongylus colubriformis* were similar to the characters that depending on identification keys specialized literates.

INTRODUCTION

Trichostrongilidosis are diseases affecting domestic and wild ruminants (Steel, 1972). Trichostrongylids are nematodes parasites of the digestive tract of ruminants, which have direct life cycle. They are very frequent in many parts of the world, where sheep are bred in the grazing system. The disease improves in temperate climates and affects all ages specially the young animals (Fritsche *et al*., 1993; Lateef *et al*., 2005).

Trichostrongylids responsible of large economic loose throughout the global, reduced growth rate, with low quality wool and decrease milk production (Steel, 1974). The most common genera that infect sheep are *Chabertia* spp., *Cooperia* spp., *Haemonchus* spp., *Marshallagia* sp. *Oesophagostomum* spp., *Ostertagia* spp., *and Trichostrongylus* spp. Specific measurements and morphological characteristics play an important role in differentiation between many eggs of gastrointestinal nematodes. Nevertheless, their difference is very difficult to attain (Ghasemikhah *et al.*, 2011).

This study aimed to make a comparison between eggs of gastrointestinal nematode females collected from gastrointestinal mass of sheep, and compared it with existing data in literature based on morphological aspects and dimensions.

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MATERIALS AND METHODS

Through the period from September 2018 to February 2019, gastrointestinal mass was obtained from 6 Awasi sheep, with ages between 2 and 3 years, after slaughter in Tikrit city, Iraq. The study was conducted at the laboratory of Parasitology of the Faculty of Veterinary Medicine, Tikrit University.

Adult nematodes were isolated and collected, which were identified according to the description by Soulsby (1965) and Dunn (1978). Gastrointestinal nematodes females of various species were triturated (Mergani *et al*., 2014). From this triturated that has been made between the blade and slide preparations, clarified by lactofenol. The measurements of eggs from each species were identified. The eggs were examined, which were considered as the length, width. At this stage, egg shape was specified by microscopic examination between slide and slide preparation. The length and width of the egg were measured using a digital microscope with LCD screen.

RESULTS AND DISCUSSIONS

Adult nematodes were isolated from gastrointestinal mass, which, rely on determination keys (Soulsby, 1965; Dunn, 1978) identified the following species: *H. contortus*, *M. marshalli*, *O. columbianum* and *T. colubriformis.*

In many references, the characteristics of *H. contortus* eggs as following: they are regular, ellipsoidal, slightly flattened at the poles and contains an embryo divide into 16 – 30 cells, and measure 70 µ – 85µ in length and 40 µ - 48µ width (Soulsby, 1965; Inder *et al*., 2010). In the current study, the eggs were oval in shape, with equal poles and divided cells not fully filled cavity of the egg. Their length with an average of 83.7µ and the width was 45.2µ (figure 1). This result agrees with the description that given by Veglia (1915) and by Blitz and Gibbs (1971) which is oval, with one side frequently more curved than the other, the poles being unequal, one being usually less, convex than the other and the average size is 70 µ - 79 μ x 45 -49μ.

About *M. marshalli*, reference (Monnig, 1940; Dunn, 1978) reported the size and characteristics of the egg as the following: an average length of about 160 µ - 200μ, and average width is 75 µ - 100μ, the egg is large, narrow, and the ends are less pointed, while the embryo consists of a morula when passed in the feces of the host. In Comparison with standard measurements of literature, we obtained a length of 113μ and width of about 76.3μ, and has the same characters as described in the literatures (figure 3).

Analyzing the morphological characteristics of *O. columbianum* eggs, Soulsby (1965) described that have thin shells and are laid in the 8-16 cells. A standard size was 73-89 μ X 34-45 μ. The result of this study showed that they are ovular in shape and the average measurements were 87.1 μ-43.7 μ (figure 4). Female released eggs at 16-32 cell stage and reached a multi-cellular stage called morula-stage in fecal samples. Also this result agreed with Gaddam (2015).

Soulsby (1965) described a standard size of *T. colubriformis* eggs 79-101 by 39-47μ. The egg is oval with thin-shelled. Comparing the size and morphological eggs characteristics of *Trichostrongylus colubriformis* obtained in this study, the average length is 84.1μ and width 44.2μ (figure 2). The isolated eggs from adult females are somewhat different in terms of morula inside them because the morula of eggs from the feces usually segmented (Inder *et al*., 2010; Shahbazi *et al*., 2012).

From measurements and appearance of eggs in these preparations can be a criterion for their identification.

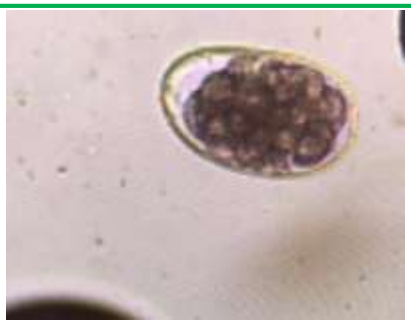

Fig. (1): *Haemonchus contortus* egg (40X)

Fig. (2): *Trichostrongylus colubriformis* egg (40X)

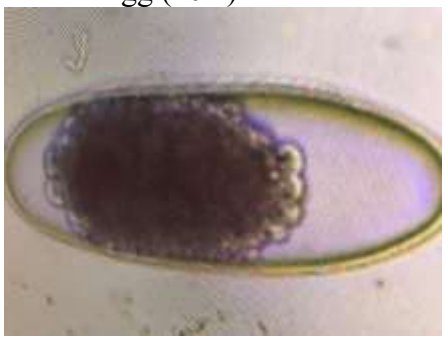

Fig. (3): Marshallagia marshalli egg (40X)

Fig. (4): *Oesophagostomum columbianum* egg (40X)

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التشخيص المظهري لبعض بيوض الديدان الخيطية التي تصيب المعدة والامعاء في الاغنام

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المستخلص

هدف البحث الحالي الى دراسة الخصائص المظهرية لبيوض الديدان الخيطية التي تتطفل على اغنام العواسي ومقارنتها مع الخصائص والمعايير المثبتة في المصادر المعتمدة في التشخيص. تم عزل البيوض وجمعها من اناث الديدان المجودة في محتويات المعدة والامعاء في الاغنام. استخدم المجهر للتعرف على مظهر البيوض الخارجي وقياسها. اظهرت النتائج بيوض الديدان التالية: *Haemonchus contortus* و *Marshallagia marshalli* و*Oesophagostomum columbianum* و *Trichostrongylus colubriformis* والتي جاءت مشابهة للصفات المعتمدة في المفتاح التصنيفي للمصادر المتخصصة.

الكلمات المفتاحية: بيوض، ديدان المعدة والامعاء، الاغنام، الشكل المظهري.