1929

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Kotlán, Sándor, Mócsy, János and Vajda, Tódor.
1929. A juhok coccidiosisának okozói egy új faj kapcsán[1]. (Coccidiosis of sheep in connection with a new species.) Állatorvosi Lapok 52(23): 304-306.

Coccidiosis of sheep has been reported in the literature by Hess (1892), Stiles (1892), Nocard (1893) and McFadyean (1896). These authors did not study the species of these coccidia partly because, on the basis of the knowledge at their time, they thought them to be identical with those of rabbits. The French authors, Moussu and Marotel (1901, 1902) studied the disease, coccidiosis, which occurred repeatedly and sometimes endemicly in certain parts of France. They studied the clinical, pathologic and histologic aspects of the disease. They were the first to point out that these coccidiawere different from those of rabbits and cattle, which were well known at that time. They considered these coccidia to be a new species and called them Eimeria faurei.

Besides the authors mentioned above, many others (Baldrey, 1906; Lerche, 1920, 1921; Douwes, 1920, 1921; Reichenow, 1921; Nöller, Schurjohann and Borbrodt, 1922; Davis and Reich, 1924) have studied coccidiosis of sheep. In their descriptions, the measurements of the oocysts, except for those of Nocard, were quite similar to those of Moussu and Marotel. These are given below:

	length of the oocysts μ	width μ
Stiles (1892)	18-21	15-16
Nocard (1893)	10-12	7-9
McFadyean (1896)	20	14
Moussu and Marotel (1901, 1902)	30-42	18-30
exceptionally	17	
Baldrey (1906)	16-28	12-18
Lerche (1920, 1921)	27-31	15-23
Douwes (1920, 1921)	24-32	15-22
Davis and Reich (1924)	24-40	17-25

Nocard's oocyst measurements differed so much from the others that he must have been dealing with another species which can hardly be identified today. It is true that the other measurements vary markedly (16-42 μ), but this is characteristic of coccidia[2]. The differences are not so great that those oocysts showing extreme measurements should be differentiated from E. faurei if the other characteristics (shape, structure) and peculiarities (biological behavior, schizogony, sporogony) are identical.

Spiegl (1925) in Germany and Sheather (1926) independently in England described another species of coccidium differing from E. faurei in every respect (measurements, structure and biological behavior). Spiegl named this new species

Eimeria intricata. Sheather did not name the new species because of the small number of oocysts; he did not know of Spiegl's paper.

In the work which we have done on the identification of parasitic helminth ova in sheep, we had a chance to study the coccidia of sheep. We have found that in our sheep, besides E. faurei, which is the commonest species, E. intricata can also be seen, but in smaller numbers. In addition to these two species of coccidia, we found a third, new species which occurred in most of the animals and differed in shape and size. These new oocysts belong to the genus Eimeria, and we name it Eimeria parva n. sp.

In the sheep of our country the following coccidia can be found: Eimeria faurei Moussu and Marotel 1902, Eimeria intricata Spiegl 1925, and Eimeria parva n. sp. The following are brief descriptions of these species:

Eimeria faurei Moussu and Marotel, 1902. The oocysts are 27-29 x 18-22 μ, ovoid, with a distinct micropyle at the narrow end covered by a prominent polar cap. They are sometimes smaller or larger in size or round in shape, with or without a polar cap. An oocyst residual body can rarely and a sporocyst residual body can always be seen.

Eimeria intricata Spiegl, 1925. The oocysts are 41-54 μ in length and 32-33 μ in width. They are ovoid and dark yellowish-brown. The cyst wall is very thick (3.6 μ), with a double layer. The inner layer is smooth and the outer one is rough and transversely striated.[3] There is usually a distinct micropyle and polar cap. Sporulation is slower than for E. faurei. The development of the sporozoites takes about 5-7 days at room temperature. We know nothing about schizogony and gametogony.

Eimeria parva n. sp. The oocysts are small, 11.4-14.3 μ in length and 9.5-11.8 μ in width. They are round or subspherical. The cyst wall is double, thin and transparent. The micropyle does not show up in the fresh stage. There is no polar cap. The sporulation time is 24 to 48 hours. The sporoblasts are round and 4.7 μ in diameter; no residual body can be seen after they have developed. The sporocysts are oval, 3.8-5 x 3-3.8 μ. The presence of a sporocyst residual body is uncertain.

The occurrence of the three species previously described varied. Eimeria faurei, which is thought by Reichenow (1921) to be the same as E. arloingi, a species previously found and described in the goat, occurred in smaller or larger numbers, either alone or with other species, in all of the animals examined. Eimeria intricata was seen in 7 out of 19 animals, but always in small numbers. Thirty to 90 oocysts cuuld be counted on a 2 x 3 cm^2 specimen prepared by the glycerin flotation technic.[4] We have noticed a certain periodicity in the appearance and disappearance of E. intricata. Eimeria parva was found in 7 out of 11 animals, in 4 cases with E. faurei and in 3 cases with both E. faurei and E. intricata. The oocysts of E. parva usually occurred in quite large numbers. These oocysts did not vary in size more than 2-3 μ. The oocysts of E. faurei are twice as large. No oocysts transitional between them could be seen, which also proves that E. parva is a separate species. The structure and shape of E. parva differ from those of E. faurei, and E. parva could not be found in some animals, not even after "drug provocation",[5] although E. faurei was always present.

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1. This paper was presented at the meeting of the Hungarian Veterinary Medical Association, November 19.

2. Years ago it was not easy to determine the average size of the oocysts by direct microscopic examination of the feces or scrapings of the mucous membrane. The flotation technic will be an aid in the identification of coccidia.

3. This peculiar structure and thickness of the oocyst wall are quite rare in the coccidia. Only Andrews has observed it, in E. cynomysis described by him from the American prairie dog in 1928.

4. For flotation of the coccidia, the following technic gave good results: 2 grams of feces were mixed with 18 cc of tap water and passed thru a screen with 144 holes per square centimeter. It was centrifuged at 2500 rpm for three minutes. The supernatant fluid was poured off, and glycerin was added to the sediment to a total of 2 cc, and it was centrifuged again for three minutes. The coccidia were transferred from the top of the fluid to slides with the aid of a glass rod.

Figure legend (photomicrographs): Oocysts of Eimeria species in sheep. From left to right: E. intricata, E. faurei, E. parva n. sp. -- 1000 x.

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