Eimeria parva (Kotlan, Mocsy and Vajda, 1929) in goats from Vaijapur tehsil of Aurangabad district M.S. India

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Abstract:

Indian economy mainly depends on agriculture sector, but agriculture is incomplete without animal husbandry. Animal Husbandry sector play very crucial role to boost up rural economy in developing country. Various animals were reared for various purpose, like sheeps, goats, chickens for meat, sheeps for wool, goats, sheeps and cows for milk, bees for honey and so on. Rearing of sheeps and goats were main as well as subsidiary business of various communities.

These goat were parasitized by genus *Eimeria*, some species of *Eimeria* i.e. *Eimeria arloingi* and *Eimeria ninakohlyakimovae* are highly pathogenic in goats. *Eimeria parva* found in goat having spherical to sub spherical in shape and less pathogenic to goat. During the period of twelve months total 680 samples were examined, out of which 133 were positive for coccidial infection, the percentage prevalence is 19.55%.

Key words: - Eimeria Sp., Goat, Agriculture, Animal Husbandry etc.

Introduction:

Agro climatic conditions according to NARP Maharashtra state is divided in 9 Agro climatic zones (ACZ). Total Area of Aurangabad District comes under western Maharashtra dry zone and central Maharashtra Plateau zone. According to rainfall, topography, soil type etc, Aurangabad district is divided into 5 Agro Ecological Situations. Vaijapur is comes under Low rainfall, Medium Soil, Scarcity Zone. So farmers belongs to this zone majorly comes under poverty line. [1]

Agricultural economy of Marathwada is mostly dependent on so many small rudiment like sheeps and goats, poultry, fishes and so on. Meat, milk, skin, eggs, manure, wool are the lots of product of these rudiments playing a major role in poor's people family. Osmanabadi, Sangamneri and Surti are recognised goat breed of Marathwada called Deccani breed. Goat is hardy animals, adapted to harsh conditions of Marathwada.

Rearing goat is mainly extensive range management system on community range land, crop residues and forest land. On goat farming near about Approximately 50 lakh families and on sheep rearing Approximately 1.5 lakh families are depending throughout Maharashtra. Rearing practices of both carried out in rural population of Maharashtra. Vaijapur tehsil of Aurangabad comes under low rainfall zone so farmers from this tehsil rear more goats as a subsidiary business.

Extensive survey to study seasonal variation from June 2020 to May 2021 was carried out to record the prevalence of coccidia in goat in Vaijapur tehsil of Aurangabad district. Material for this investigation was obtained from various villages and fields around the Vaijapur tehsil. The collected faecal samples are placed

in separate plastic pouch and put it in the refrigeration until examination. During the period of twelve months total 680 samples were examined, out of which 133 were positive for coccidial infection, the percentage prevalence is 19.55%.

Microscopic (Parasitic) protozoan shows great economic losses in various livestock industries. Parasitic protozoan particularly from phylum Apicomplexa i.e. *Eimeria* causes disease 'coccidia' in sheep, goat, chicken, birds, cow and other economically important animals. Coccidiosis is more common and cause diarrhea in young goats.

Diseases and health problems of goats are closely associated with management and nutrition practices. Several species of coccidia causes extensive pathological damage and mortality in cattle, poultry, pig, sheep, goat and other animals. The study of coccidia has enhanced this group's pathological, medical and veterinary importance. The aim of this study was to determine seasonal variations of coccidial infection and pathology of coccidiosis of goats. Along with pathogenic *Eimeria arloingi* and *Eimeria ninakohlyakimovae*, *Eimeria parva* was observed during our research work. It is resides in the small intestine caecum and colon. The schizonts are found as whitish bodies and visible to naked eye on mucosa or far down up to muscularis mucosea. (Mandal et.al.;Book of *Eimeria*)

Material and methods:

Study period and area:

Extensive survey to study seasonal variations from June 2020 to May 2021 was carried out to record the prevalence of coccidia in goat in Vaijapur tehsil of Aurangabad district. Material for this investigation was obtained from various villages and fields around the Vaijapur tehsil. The collected faecal samples are placed in separate plastic pouch and put it in the refrigeration until examination.

Sampling:-

Different faecal samples of goat were collected from various locality of Vaijapur tehsil for study of prevalence and morphology of Eimeria of goat. Collected samples were carried out in laboratory for microscopic observations. The samples were collected according to age, sex, species, and locality.

The samples were examined and processed within four to five days after collection. The faecal contents were diluted with distilled water and sieved to remove the large faecal debris. After repeated washing the oocysts were concentrated by centrifugation at 3000- 5000 r.p.m. for 10 minutes. The oocysts were then spread out in shallow petridish and covered with 2.5% solution of potassium dichromate for sporulation. Care was taken to see that they were properly aerated and also to prevent desiccation. The sporulation was carried in all cases at room temperature (about 28ºc – 32ºc). The oocysts were examined regularly to check up if they are sporulated. The checking was done twice daily in the case of species with a sporulation time of more than one or two days [6].

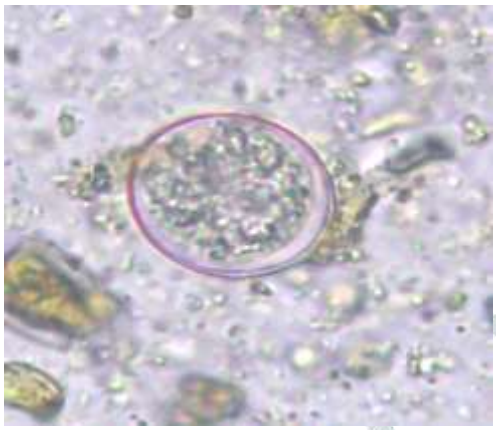
Technique

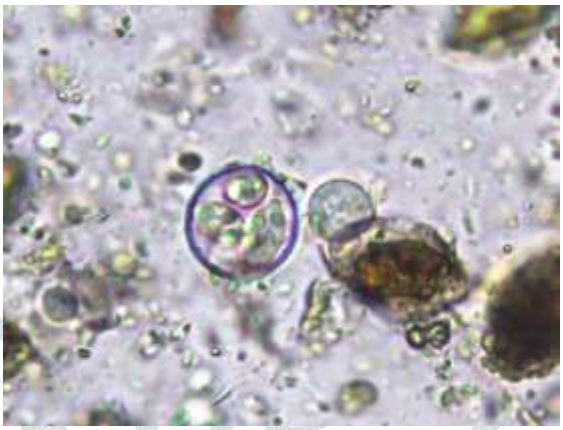
Floatation technique Faeces were examined microscopically by floatation technique using saturated sodium chloride solution according to MAFF (1986) and Urquhart et al., (1996).Positive samples were subjected to sporulation of their Eimeria oocysts. Sporulation of recovered Eimeria oocyst Positive samples

were mixed with 20x their volume of 2.5% w/v an aqueous potassium dichromate solution, put in Petri dishes thin layers to allow oocysts to initiate sporulation process at room temperature (24 ċ to 33 ċ) for 7-10 days as previously recorded (Harper and Penzhorn, 1999). After sporulation, samples were stored at 4^{o} c to keeping oocysts integrity.

Results and Discussions:

Morphology of the oocyst:





Unsporulated oocysts of the *Eimeria parva* **Sporulated oocysts of the *Eimeria parva***

Oocysts of the *Eimeria parva* spherical to sub spherical, ovoidal in shape. It is measures 15.5-26.6 in length 15 – 22.2 in breadth. Body wall is double layered yellowish to brown in colour. Measures up to 0.5 to 6 micrometer in length. Micropyle and micropolar cap is absent. Sporocysts are ellipsoidal, having one end rounded with definite stieda body. Sporocystic residuum is present. The shape of the sporozoites are pyriform and contains large refractile body.[8]

Sporulation time: - Sporulation time is 24-78 hrs.

Dimensions of the oocysts reported by other authors (All measurements in microns)

Authors	length	width
Kotlan,Mocsy and Vajda (1929)	11-14	9-12
Balozet (1932)	17	13.15
Christensen (1938a)	12-23	10-19
Svanbaev (1957b)		
Kamalapur (1961)	18	15
Shah and Joshi (1963)	16-23	14-22
Singh (1964)	14	15
Chevalier (1965)	17	14.5
Nikam (1983)	17-28	15-26
Jadhav (2002)	17-23	15-21
More (2011)	18-26	14-20
Sonttake (2016)	16-23	13-29

Present author	15.5-26.6	15 – 22.2

Discussions

This species was first described by Kotlan, Mocsy and Vajda (1929) from Sheep. Later on subsequently recorded by Balozet (1932), Christensen (1938a), Svanbaev (1957b) and Chevalier (1965), From India authors like Sharma (1951-52), Hiregaudar (1954 a,b), Ray (1961), Kamalapur (1961), Patnaik (1963), Shaha And Joshi (1963), Singh (1963,64), Jha and Subhramanium (1965,66), Bhatia and Pande (1970), Bali (1972), Mishra and Mahapatra (1972), Krishnamurthy and Kshirsagar (1976), Nikam (1983), Jadhav (2002), More (2011), and Sonttake (2016).[4] reported this species from goat and sheep.

The present species compared with Kamalapur (1961), Shah and Joshi (1963), Singh (1964), Chevalier (1965), Nikam (1983), Jadhav (2002), More (2011), and Sonttake (2016). [5] This species shows most of the characteristics are same with minor morphological differences. So, this is redescribed species of *E. parva* from goats in Vaijapur tehsil

Host: *Capra* hircus

Habitat: Oocyst found in intestinal content

Locality: Vaijapur, Dist. Aurangabad, (M.S).

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