



## PREVALENCE AND SEASONAL STUDY OF GASTROINTESTINAL AND SOME PROTOZOAN PARASITES FROM SMALL RUMINANT IN AN AROUND SILLOD TAHSIL FROM AURANGABAD DISTRICT

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### ABSTRACT:

Rearing of small ruminants are the important for farmer to improving the economy of our country. New breed majorly used in rural areas to obtain high productivity. If ignore Proper management and health care then parasites infects the animals and cause less productivity. Helminthes and Protozoan parasites are the major gastrointestinal parasites which cause hazardous effect on small ruminants such as sheep and goat in rural areas, which create highly economical loss of farmer. If ignore these infection cause higher mortality rate. The present study carried out to investigate prevalence of gastrointestinal and some protozoan parasites, their rate of infection seasonally and risk factor in sheep and goat from Sillod tahsil, from Aurangabad district in Maharashtra. Fecal sample were collected from different sites of geographical location around Sillod tahsil. Overall study period was since June 2018 to May 2019. During this period 410 samples from sheep and 530 from goat as total 940 samples were collected seasonally. Out of them 296 positive (72%) in sheep and 327 positive (61%) in goat gastrointestinal parasites. Overall 643 samples positives out of total 940 samples. High infection rate found in monsoon season 83% in sheep while 73% in goat. During winter 71% in sheep and 60% in goat, 61% in sheep and 50% in goat during summer respectively. Age and sex wise infection higher in less the one year animal 80% while sheep shows more infection rate than goat. Infected animal shows loss of weight, birth rate and difficulty during feeding. Other Protozoan parasites *Coccidia*, *Balantidium* and *Entamoeba* species also found in higher rate. Coccidiosis is more Zoonotic agent found 69.45% during study period.

**Keywords:** Prevalence, Seasonal, Helminthes, Protozoan, Sheep, Goat, Sillod.

### INTRODUCTION:

Rearing of small ruminants are the major sources for rural communities in India. Among the livestock large diversity of sheep and goat gives 0.5-5% of total output, (Singh, 1995). On the base grazing flocks of sheep and goat in the form either migratory during season to season. In Maharashtra rearing mostly occupied by dhangar community. The dhangar stay in the village during monsoon with their flocks of small animals and feed to millets. Later on migration towards grazing lands on natural land across the state and hilly area.

Sheep flocks from Solapur districts migrate towards Marathwada region in search of fodder and water. Flocks from Aurangabad, Jalna migrate towards forest areas of Dhule and Jalgaon districts. This migration continues up to the May end, after which flocks return to their native villages, (Dept. of animal husbandry, Govt. of Maharashtra). Older and Poor people's family rare goats in their farm or side of village boundary.

Different product obtained from sheep and goat such as milk, wools and good price at market yard as well as skin is used for making

different leather product. Different communities of people consumed meat (flesh) of sheep and goat. Grazing of these animals in natural habitats always interaction with parasitism which infect serious health problem. Still around rural areas people not able to maintain their animals for diagnosis of illness medication perfectly. If no proper precaution and medication greatly loss productivity. Animal disease such as parasitism, viruses and bacterial infection majorly causes health of goat and productivity (Nansen, 1991; kushiluka, et. al, 1998).

Intensive rising of small ruminants farms inevitably exposes the flock to various diseases which causes economic loss of farmers. Parasitic disease animal can also be hazardous to the health of human. There may be possibilities of damage to the human body due to intake of the diseased animal. In India, particularly in rural area health status of the small ruminants due to diseases is being faced by farmers. The health status of sheep and goat mostly fluctuates by parasitic infection. Generally two broad categories parasites cause hazardous effects as ectoparasites and endoparasites. The ectoparasites are ticks, lice, keds and mites while endoparasites of gastrointestinal nematode, cestodes, trematode and protozoa respectively. This parasitic infection has a serious impact on health, productivity, quality and quantity of meat. It also reduces the food value of small ruminants. Which intern affects on total production causing high economic loss to farmers as well as the country too.

Considerable knowledge pertaining to parasites was known in ancient India (Hoeppli, 1956) the credit for laying the scientific foundation of parasitology in general and of veterinary and medical parasitology particular,

in India goes to a few enthusiastic officers of the veterinary and medical services in the second half of the 19<sup>th</sup> century, the history of parasitology in India can be followed in successive phases. Knowledge in this area has come to light only during the beginning of the twentieth century (Cheng, 1964) at the time of second phase in India. Parasitological research was incepted in different universities in the country. Recently in the field of life science particularly Zoology many workers who made extensive work about morphology, biology and population of parasites. Helminthes required period of maturation in the soil to become infectious, other require the involvement of an intermediate host reported by Arcari et al. (2000). The most favorable sites for intestinal parasites are the duodenum, ileum, cecum and large intestine reported by Cuomo et al. (2000). To survive or reproduce in the gastrointestinal tract the parasites have to adapt to continuous physiological changes relative to the feeding habitats of the host reported by Lyons et al. (1914), Leonard (1987), Cuomo et al. (2000).

#### **MATERIALS AND METHODS:**

The study of prevalence rate helminthes and Protozoan parasites has been done at Sillod tehsil during June 2018 to May 2019. Sillod is fastest growing tehsil under Aurangabad district. Rearing of sheep and goat is the most demanded occupation in rural parts of Sillod tehsil. Sillod city is the huge increasing population in district Aurangabad. Many other immigrates here for search of employment, job and business. Population up to 70thousands and coordinates is 20.3N 75.65E. So there is great demand for meat, milk and their product, this gives better options for rearing small ruminants in Sillod tehsil and around part. The survey of annual tehsil estimated

that 100-150 animals used in slaughter house per day for meat selling. The government also launches various schemes for poor farmer loan scheme on sheep and goat rearing. The detail study taken to find out parasitic infection rate during season to season.

### **Study Design**

Randomly section of flock and differentiate each flock into age and sex wise animals. 50 Different sampling stations completed fecal samples were collected from different sites of geographical location around Sillod tehsil. Overall study period was since June 2018 to May 2019. During this period total 940 samples were collected. All the data recorded with collection site, date and number of positive and negative sampling. The data has been tabulated with the help of Microsoft office Excel, Tables, Charts and graphs.

### **Fecal sampling**

The fecal samples were collected randomly from farm yard and migratory flock of animals respectively. Farm animal gets ready foods provided by owners while migratory goats grazing on natural land habitat of grasses and small bushes. Fecal samples were collected carefully and skillfully handling of goat animals. Sample also collected from slaughter house under veterinarian professional. The plastic (polythene) gloves are used to collection fresh samples from rectum of each goat. Samples also collected from ground when freshly excreted by animal during supervision. Sample was stored in 3% formalin containing test tube. Immediately tightly packed with labeling. Finally samples were stored in ice box and bring it to the laboratory for further examination.

### **Fecal Examination**

Examination takes place under light microscope. Use of stains to better detection of parasites.

#### **A) Direct smear Method examination**

Direct observation of helminthes parasites by placing of small quantities of sample at two different sides by dropper on same clean and dry slide. Out of one sample added by iodine solution and direct examine parasites under microscope.

#### **B) Flotation Method Examination**

The small quantities of samples take in test tube and filled it with water up to top, place the cover slip horizontal. Finally cover slip placed on slide and direct observation under microscope.

#### **C) Sedimentation Method Examination**

Samples were centrifuge and small amount of sample collect from bottom of test tube for examination.

Above B and C method by MAFF (1986). Parasites detection by temporary mount slide, later on permanent slide constructed.

### **RESULTS AND DISCUSSION:**

During these period 410 samples from sheep and 530 from goat as total 940 samples were collected seasonally, out of them 296 positive (72%) in sheep and 327 positive (61%) in goat gastrointestinal parasites. Overall 643 samples positives out of total 940 samples. High infection rate found in monsoon season 83% in sheep while 73% in goat. During winter 71% and 60% while 61% and 50% in summer respectively. Near about same result reported by A. Vardharajan and R. Vijayalakshmi (2015). Age and sex wise infection higher in less the 1 year animal 80% while female goat shows more infection rate

than male. Infected animal shows loss of weight, birth rate and difficulty during feeding. Species wise prevalence infection rate recorded in table 1 and expressed in pie charts. Gastro intestinal parasites such as *Haemonchus* species (39.63 %) *Trichuris* species (25.09%) *Strongyloides* species (19.63%) *Fasciola* species (10.09%) *Moniezia* species (9.81%) *Amphistomes* species (7.27%) and mixed infection belongs to protozoan parasites.

The rate of *Haemonchus* species infection higher in all seasons, also recorded by A.U.Sutar (2010), Patanaik et,al (1973). The seasonal occurrence and variable prevalence rate (39.34–92.4%) of these parasitic infections have been reported from different states of India as Chhattisgarh Pathak and Pal (2008), Haryana Gupta et al. (1987), Jammu and Kashmir Mir et al. (2008); Tariq et al. (2010); Khajuria et al. (2006); Lone et al. (2012), Karnataka Murleedharan (2005), Maharashtra Maske et al. (1990); Chavhan et al. (2008); Sutar et al. (2010).

The gastrointestinal parasitic infection commonly found during monsoon and post monsoon season in India and their prevalence shows variation as per environmental conditions. Yadav and khajuriya (2012) reported from Jammu district examined fecal sample of small ruminants and find out 83.07% gastro intestinal parasites, they found that it was highest during rainy season after summer and winter. Parasitic infection negatively affecting the health and huge economic losses owing to both clinical and chronic sub clinical infection reported by Singh et al., (2011). Coccidian shows highest rate 69.45% just near the results as A. K. Dixit, G. Das, R.P.S. Baghel (2017). Alok Kumar Dixit (2017) and Singh A (2015) but

some coccidian are not pathogenic. More infection found in winter as same result found by A. K. Dixit, G. Das, R. P. S. Baghel (2017). *Balantidium* species infection rate 10.00% as same result found from Rajasthan in cattle Choubisa SL Jaroli VJ, and Ying-Na Jian, Ge-Ping Wang, Li Qing Ma.

#### CONCLUSION:

The present study revealed that the helminthic infection commonly found in small ruminants (sheep and goat) in an around Sillod tehsil in Marathwada region. The higher rate of infection found in rainy season than winter while lowest rate of infection found in summer season. *Haemonchus* species are most prevalent species followed by *Trichuris* and, *Strongyloides* species respectively. Apart from these Protozoan parasites also found in same selected ruminants. Among them Coccidian species more in percentage. This study indicated that helminth and protozoan infection in these selected small ruminants is highly prevalent in this region. If ignore them ultimately loss the health of animal and also due to the higher infection causes mortality in the animals. Therefore it is necessary to create awareness among the people and farmers in this area about the spread of such kind of infection in the small ruminants. So it can be concluded that further studies on the appropriate control measures of the parasitic infection in small ruminants need to be design for improvement the health status of these animals and productivity, it will be helpful to minimize the loss of the farmers ultimately increase their economic status.

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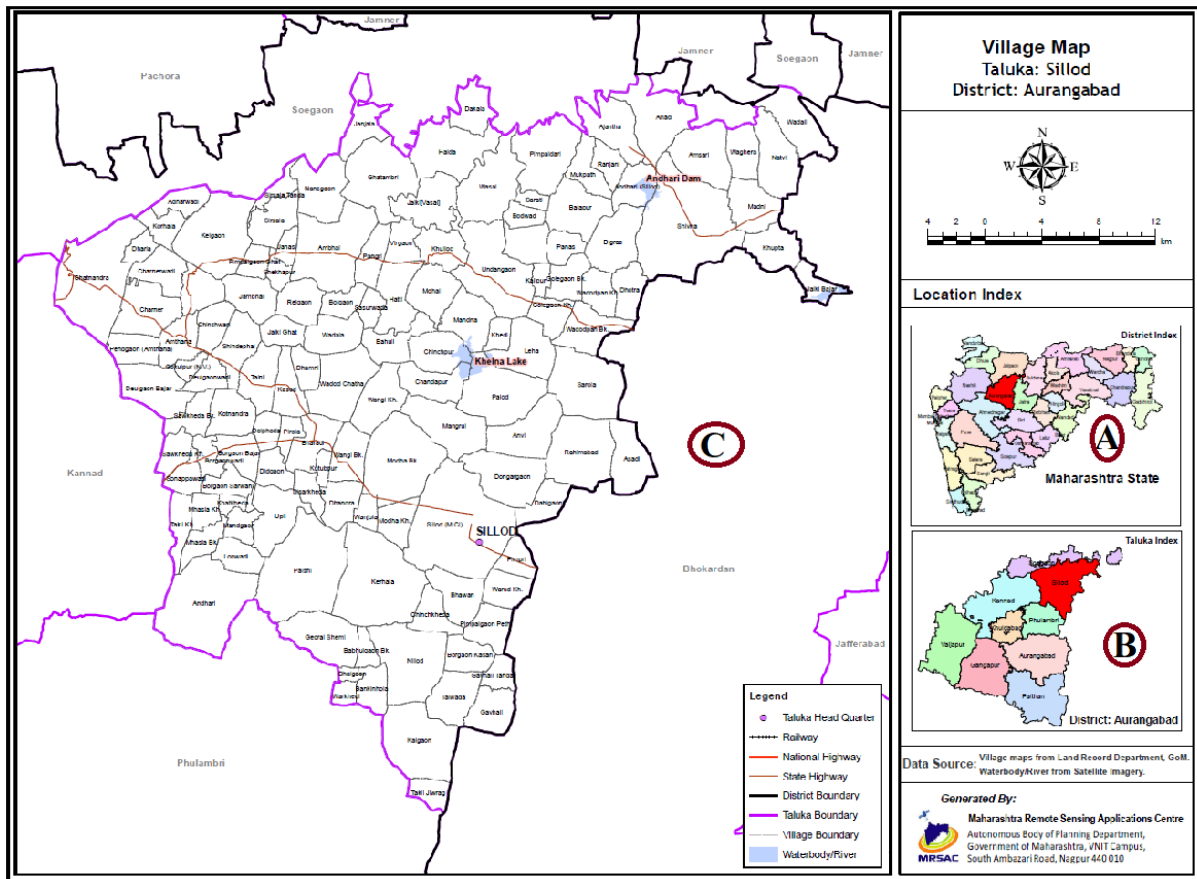
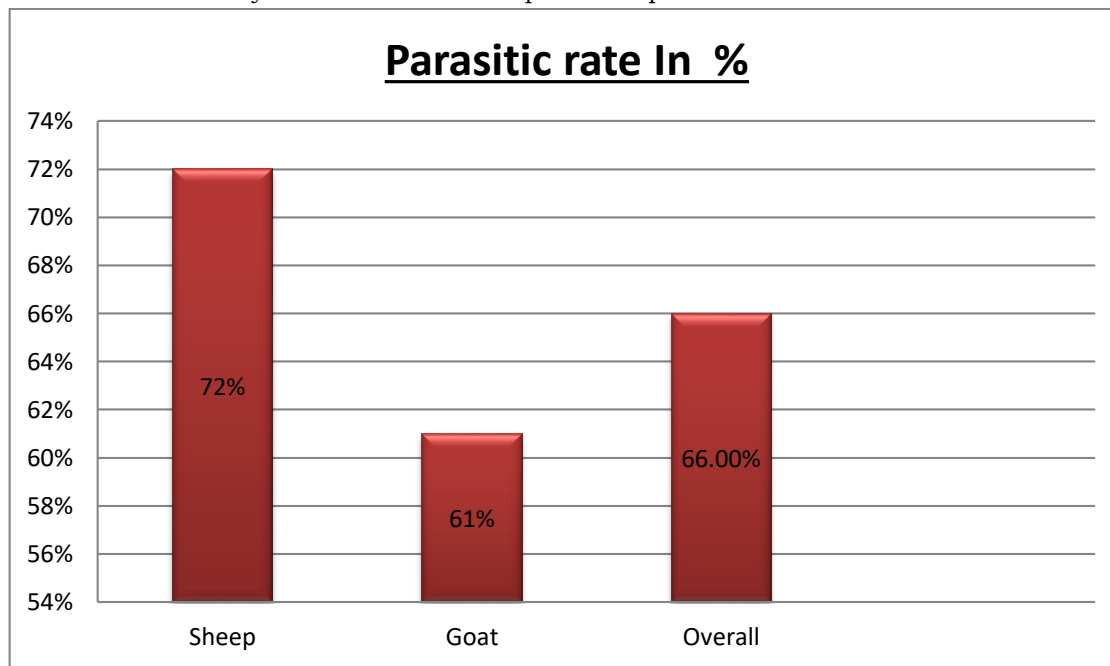


Fig.No.1: Map showing A-Maharashtra (State), B-Aurangabad (District), C- Sillod (Tehsil).



Fig. No. 2: Sample collection at  
Different sites during the study (A,B,C).

Table No.1: Data analysis of helminthes and protozoan parasites.

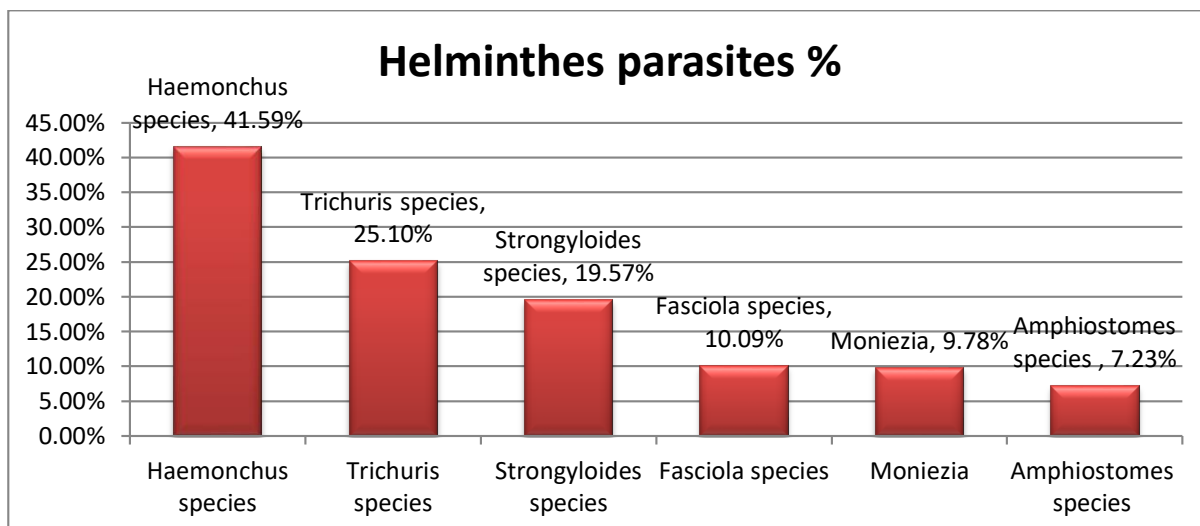


Graph No. 1: Graph showing data analysis of helminthes and protozoan parasites.

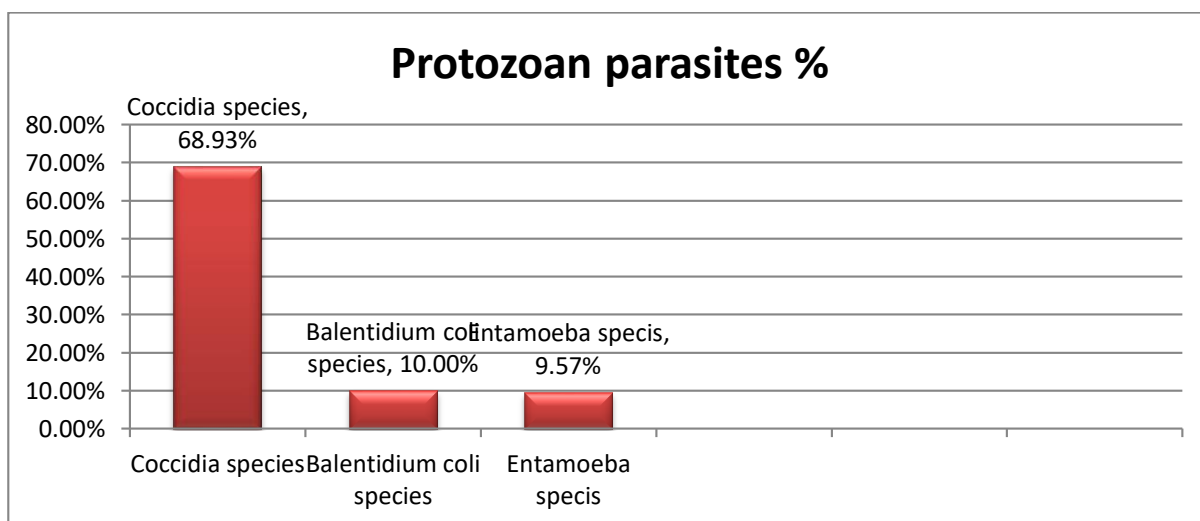
Table No. 02: Species wise results of Helminthes and Protozoan parasites from sheep and goat.

Sr.No	Parasites Diagnosed	Total number of samples	Total number of Positive samples	Equivalent Percentage
<b>Helminthes parasites</b>				
01	<i>Haemonchus species</i>	940	391	41.59%
02	<i>Trichuris species</i>	940	236	25.10%
03	<i>Strongyloides species</i>	940	184	19.57%
04	<i>Fasciola species</i>	940	092	10.09%
05	<i>Moniezia species</i>	940	068	9.78%
06	<i>Amphistomes species</i>	940	094	07.23%
<b>Protozoan parasites</b>				
07	<i>Coccidia species</i>	940	648	68.93%
08	<i>Balantidium coli species</i>	940	094	10.00%
09	<i>Entamoeba species</i>	940	090	09.57%





Graph No.2: Graph showing species wise results of Helminthes parasites from sheep and goat.

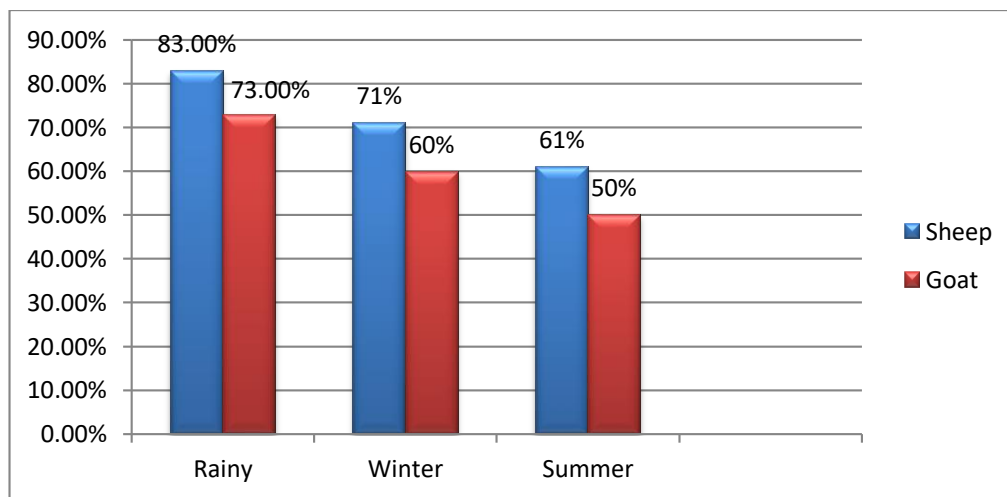


Graph No. 3: Graph showing species wise results of Protozoan parasites from sheep and goat.

Animal	Number of samples collected	Number of samples positive for parasites	Infection in%
Sheep	410	296	72%
Goat	530	327	61%
<b>Total</b>	<b>940</b>	<b>623</b>	<b>66%</b>

<b>Seasonal Variation</b>	<b>Sheep</b>			<b>Goat</b>		
	<u>Total Sample</u>	<u>Positive Sample</u>	<b>Rate of Infection</b>	<u>Total Sample</u>	<u>Positive Sample</u>	<b>Rate of Infection</b>
<b>Rainy</b>	<u>136</u>	<u>114</u>	<u>83%</u>	<u>176</u>	<u>130</u>	<u>73%</u>
<b>Winter</b>	<u>136</u>	<u>97</u>	<u>71%</u>	<u>176</u>	<u>107</u>	<u>60%</u>
<b>Summer</b>	<u>138</u>	<u>85</u>	<u>61%</u>	<u>178</u>	<u>090</u>	<u>50. %</u>
<b>Mean %</b>			<u>72%</u>			<u>61%</u>

Table No.3: Seasonal Variation results of Helminthes parasites infection from sheep and goat.



Graph No.5: Graph showing seasonal Variation results of Helminthes parasites infection from sheep and goat.

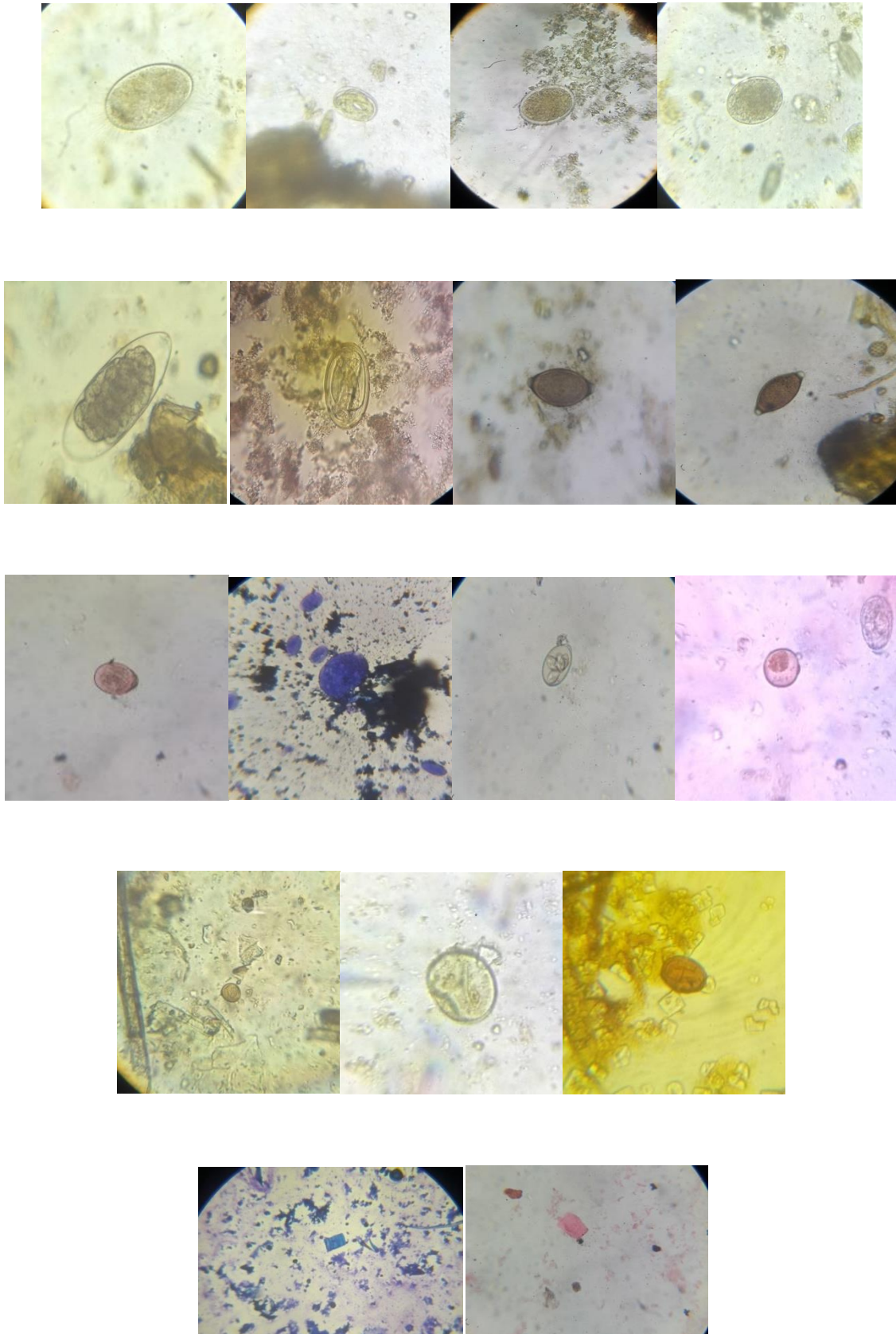


Fig. No. 3: Microscopic images of Helminthes and some Protozoan species.