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Detection of Nematode *Parabronema skrjabini* in Goats at Basrah Province

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Abstract
Nematodes are un-segmented. The study extends from November 2010 to May 2011 , a total of 150 abomasums of goats were collected from slaughter house in Basrah Province to diagnosed nematode that infect goat. The first part of study included the examination of abomasums goat and determined of nematodes there, one nematode were recorded in abomasums for the first time: *Parabronema skarjabini* and from 21 infected abomasum of goats with percentage rate was 4.91%. The second part of study included the observation of the activity of isolated nematodes development of egg and larva formation, while, the third part of study associated with Electrophoresis of the isolated nematode *P. skarjabini*. This study revealed the first time in Basrah province. The result of monthly variation revealed that the highest level of infection in goat occurred in November and March and there was no infection in goat in December and January, and *P. skarjabini* can live in phosphate buffer saline for seven days, in alcohol 70% and formalin can stay for 1-24 hour, and five days respectively, the result of electrophoresis of isolated nematodes with molecular weight was 72 KD.

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1. Introduction

Nematodes (round worms) are un-segmented, hair like, tubular worms ranging in size from a few millimeters to several centimeters, which are responsible for most of the helminthes diseases of veterinary importance and tissues or organs of every class of vertebrates and even some invertebrates are vulnerable to invasion by them (Reinecke, 1983; Brander et al., 1991). These parasites cause pathological changes in the animal that disrupt digestion and reduce appetite, which in turn affect the host immune status during infection and the ability to prevent parasite establishment and development and reduced appetite causes anorexia (Arneberg et al., 1996).

Parabronemosis was a disease caused by the nematode *P. skrjabini* parasitized in abomasums of ruminant (Kaufmaun and Pfister, 1990). *P. skrjabini* are described from horned cattle and sheep in Russian and Turkestan by Rasowskaia, 1924 (Sarwar, 1954). *P. skrjabini* was recorded for first time in goats in Turkey (Umur and Yukari 2005), and then it was recorded in Saudi Arabia with the prevalence 6.3% (Al-Azazy, 1995). In Iraq there was a few studies about this parasite, while, in our province this is the first one. The infection with *P. skarjabini* have indirect life cycle. *Stomoxys* spp and *lyperosia* spp. are intermediate hosts, infective third stage larvae develop in the flies and are deposited on the final host were larvae are ingested (Kaufmaun and Pfister, 1990).

2. Objective of Research

This study was design to Isolation and identification of *P. skarjabini* that found in abomasums in goats in Basrah province and study the possibility of isolating the antigens from worms.

3. Materials and Methods

3.1 Sample collection

Two to three days every week regular visit of major slaughterhouse in Basrah province was done from November 2010 to May 2011 and a total of 201 abomasum of goats were taken. The abomasums was removed from abdominal cavity and legated at both ends, and immediately taken to the laboratory of Parasitology in Veterinary Medicine College at Basrah University, for appropriate examination.

3.2. Laboratory study

The method of Hansen and Perry (1994) and Maff, (1997) were done for detection and collected parasite. According to the method by Anderson et al. (2009) and Gibbons, (2009) the isolated nematodes were fixed and preservation. Furthermore, the isolated nematodes were washed at first with tap water, distilled water, and then saved in each of which with Phosphate Buffer Saline (PBS), formalin, and natural vinegar, then measurement and monitored vitality later. Antigen was prepared according to Mir et al. (2008) and Protein concentration of crudsomatic antigens was estimated by spectrophotometric assays at 235 and 280 nm according to the following equation:

Protein content mg/ml= (A235-A280/2.51).

Gel Electrophoresis technique was performed for each antigen prepared from isolated parasites by using the method (Laemmli, 1970) to test of purity of the protein .In order to determine the statistical significance among different variable SPSS (1998) program(statistical program for social sciences), Chi – square test, stander error of mean and $p \leq 0.05$ was used.

4. Results

A total of 201 goats abomasums were examined, with total abomasums infection was 21 in goat during the study period from November 2010 to May 2011. In this study, one species of nematodes were identified, for the first time *P. skarjabini* appeared to be the most important parasites with percentage of infection 4.47% and intensity of infection. The result of monthly variation in current work revealed that the highest level of infection in goat occurred in November and March (14.28 % and 22.75) and there was no infection in goat in December and January, with high significant differences (27.39) (table 1).

Table 1: The number of examined, infected goats with *Parabronema skarjabini* and percentage of infection in months of study

Month	No .of examined goat	No .of Infected goat	Percentage %
November (2010)	70	10	14.28
December	25	0	0
January (2011)	31	0	0
February	20	3	15
March	22	5	22.75
April	13	1	7.96
May	20	4	20
Over all	201	12	10.44
X^2= 27.39		*p<0.05*	

4.1 Description and measurement

P. Skarjabini (Rassowska, 1924).

This parasite characterized by as fresh red in color , slender , and long , female longer than male and it's infected foundic and mucosa layer which cover the abomasums it was firmly embedded there, can recognized by spiral liner, form of egg was longitudinal or filiform, there were no excretory pore, tail short, pointed or blunt and curved towards the dorsal side in female , but in male tail coiled ventrally, lateral alae near the posterior extremity, mouth provided with pair of lateral posterior, while, the spicules are markedly unequal, length 15-18(16.5) and 35-48 (41.5) mm and width 100 - 120 (110) µm, and 155-230 (193.5) µm for male and female respectively (Figure 1, 2).

P. skarjabini in fresh red in color, inhibit all layer of abomasum and can live in phosphate buffer saline for seven days it was more activation than other nematodes, while, in alcohol 70% and formalin can stay for 1-24 hour, and in the five days the egg excreted which are filiform, in period between 5-7 days larva persist inside egg then In six day the larva go out which is worm-like form and animated (tables 2 and 3).

Figure 1: *Parabronema Skarjabini* **(A)** *Parabronema skarjabini* adult (wire shape). **(B)** Anterior end: (bc) buccal cavity and (eso) esophagus

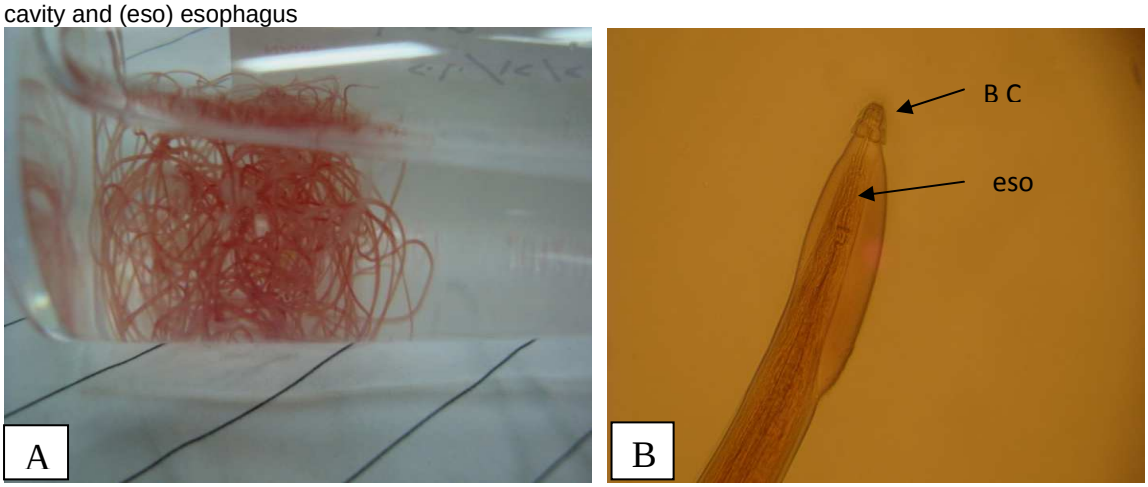


Figure 2: *Parabronema Skarjabini* **(A)** Posterior end of male: (s) spicules, (al) alaa and (p) papllia. **(B)** Egg of with longitudinal form

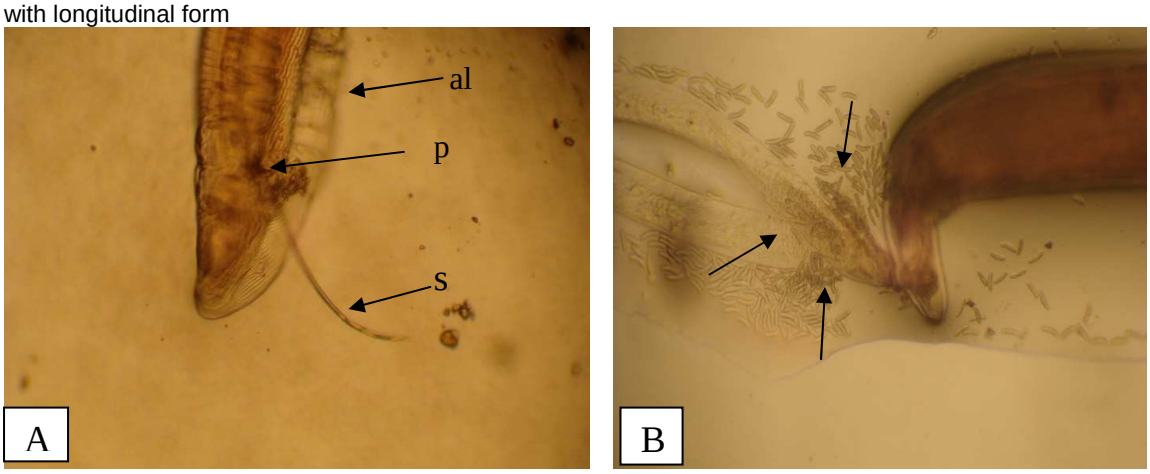


Figure 3: Shows the Linear Equation of Stander protein as Logarithm of the Molecular Weight by Dalton and the Transfer Distance by cm

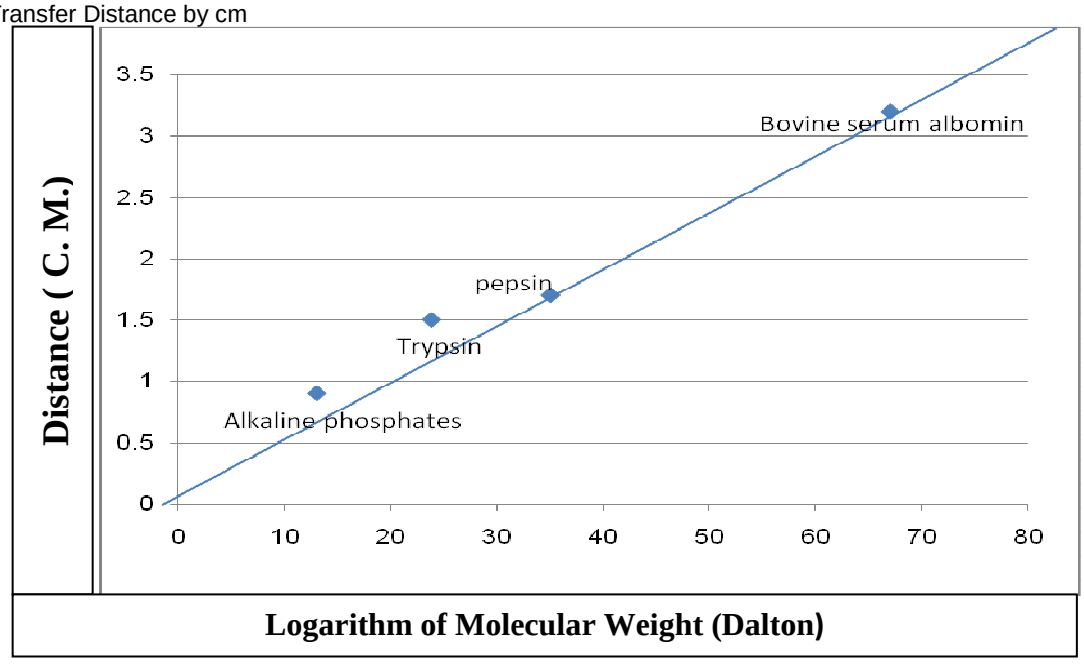


Table 2: The Parasite saving in the Following Solution

Parasite	*Parabronema skarjabini*
Phosphate Buffer Saline (PBS)	Several month
Natural vinegar	Several month
Alcohol 70%+glycerin	Several month

During the current study the result of electrophoresis of isolated nematodes *P. skarjabin* the molecular weight was 72 KD, the nematodes which contain more protein than others nematodes compared with standard protein was obtained from trypsen, pepsin, bovine serum albumin and alkaline phosphatase from rabbits and the molecular weight of these protein 23.8 KD, 35 KD, 67 KD and 13 KD, respectively, and the result are summarized in these (table 4).

Table 3: The biological study of *Parabronema skarjabin* that isolated from abomasum of goat

Nematodes	*Parabronema skarjabin*
Period which can stay out the host	7 days
Period which can stay in phosphate buffer saline	7 days
Period which can stay on alcohole70%	24 hour
Period which can stay in formalin	At once
Period of egg development	In five day the egg excreted, which are filiform
period which consist larva in egg	5-7 days
Movement the larva inside egg	In six day the larva go out which is worm-like form and animated
Color of isolated parasite	Red-fresh red
Location	Foundic , pyloric and mucosa layer of abomasums

Table 4: The migration distance of standard protein and *Parabronema skarjabin*

Molecular Weight of Standard Protein	Migrated Distance
Trypsen	1.5 cm
Pepsin	1.7 cm
Bovine serum albumin	3.2 cm
Alkaline phosphatase	0.9 cm
Parabronema skarjabin	3.2 cm

5. Discussion

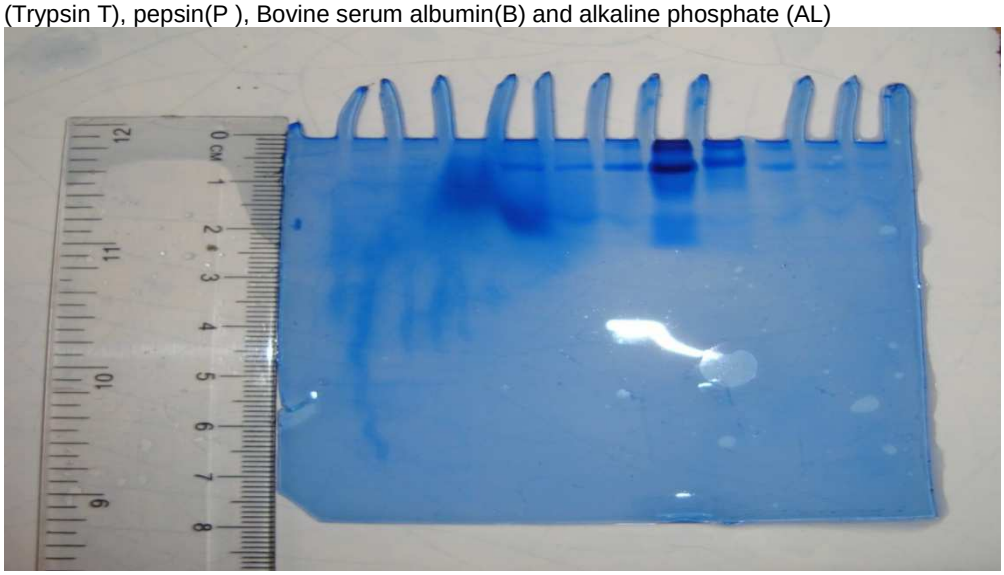
The present study revealed an overall prevalence of 27.39% of abomasal nematode in goat. These might be due to the difference in sample size, differences in cities of countries, weather changing as rainfalls and climatic, and these results agree with the (Tesfalem, 1992; Ammar, 1997; Haileleul, 2002 and Al-Bahy et al., 2008) which have the same results.

The present study was recorded one nematodes species in goat: *P. skarjabini*, this species of abomasal nematodes have been recorded for the first time in Iraq especially in Basrah Province with percentage of infection 4.47%, also goats is conducted to be important as a disease in small ruminants, this might be due to provide optimal conditions (rain and humid climate) lead to growth and development of this parasite in the host and increased availability of nematode larvae on pastures and marked increase in the availability of the intermediate host (pupa). The same result found by AlAzazy (1995) in Saudia Arabia and AlBahi (2011) in Iraq with percentage infection 6.3%, 4.99% respectively.

There was no significant difference ($p > 0.05$) in goats indicating that species are almost equally susceptible to *P. skarjabini* this finding is in agreement with earlier study in Kenya (Githigia et al., 2005; Valcarcel and Romero; Gauly et al., 2006).

There were a significant difference $p < 0.05$ among percentages of infection according to months, higher worm infestation was recorded in goats with high percentage of infection in February and March and the lowest percentage in December and January. Overall the seasonal abundance of abomasal nematodes appeared to be influenced by animal management in addition to climatic conditions. Unexpectedly, lower prevalence and intensity of infection was observed in winter. There by goat flocks are dispersed to graze over vast areas causing a dilution of the potential larval concentration on pasture and subsequently lowering the chance of uptake of infective larvae. In contrast, this leads to limitation of grazing areas and then overstocking, the situation which ultimately facilitates the dissemination of parasites. In addition, poor pasture in the dry season lowers the resistance of the animals which then become more susceptible to infection with nematodes. The result of present agreed with (Altaif and Issa, 1983; Vercruysse, 1985; Chiejina et al., 1988; Kaufmaun and Pfister, 1990). The present study was recorded the ability of *P. skarjabini* to continue of their vital activities like feed, movement and development of egg in side females for several

Figure 4: The Electrophoresis for *Parabronema skarjabini* (p. s) Antigen Compared with Standard protein (Trypsin T), pepsin(P), Bovine serum albumin(B) and alkaline phosphate (AL)



days and can stay outside of abomasums for seven days in Phosphate Buffer Saline. this result might be due to resistance of these nematodes to environmental conditions in addition to that the Phosphate Buffer Saline an isotonic solution which is possibility contains some elements that the nematodes needed it to continue the life outside the host and the same results were found in 70% alcohol + glycerin and formalin 10% in natural vinegar this agree with (Al – Emarah et al., 2009).

An deportation from the results of the electrophoresis of antigen was found ,that the molecular weight varies between parasite to another ,and that all of the antigen showed a protein only one of any sense that it partially pure protein this result agreement with (Al – Emarah, 2007).

Research Highlights

We believed that nematode *P. skarjabini* were recorded in abomasums of Goats for the first time in Iraq with percentage rate was 4.91%.

Finding and Policy Aspects

As it shows that goats were infect with *P. skarjabini* and the observation the activity of isolated nematode at development of egg and larva formation associated with electrophoresis study of the isolated nematode make a clear results can other studies done.

Justification of Research

The present article showed the importance of research in cattle to establish the scientific findings.

Conclusion

The result of monthly variation revealed that the highest level of infection in goat occurred in November and March and there was no infection in goat in December and January, and *P. skarjabini* can live in phosphate buffer saline for seven days, in alcohol 70% and formalin can stay for 1-24 hour, and five days respectively, the result of electrophoresis of isolated nematodes with molecular weight was 72 KD.

Recommendation

Further research need by direct infection of caw for molecular characterization of this nematode.

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Limitation

The nematode under this study with high importance and may be with high antigenic because of high amount of protein in qantitive and qualitative which may be cause an economical looses for the goats.

Authors' Contribution and Competing Interests

The both author's with veterinary parasitology interest.

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