قسم الطفيليات
معهد بحوث صحة الحيوان - سوهاج
رئيس القسم : د/ فوزي عبدالسلام •

بعض الدراسات على طفيل الميتاسركاريا المتحوصلة في أسماك الشلبة النيلي بمحافظة سوهاج

العدوى التجريبية لصغار الحمام بواسطة الميتاسركاريا الحية لدودة البروهيمستومم فيفاكس

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حويصلات الميتاسركاريا الحية جمعت من أسماك مصابة بصورة مكثفة ومتوسطة من نوع أسماك الشلبة النيلي المنتشر بمحافظة سوهاج • تم معرفة قدرة هذه الأطـــوار المتحوصلة من ناحية القدرة على العدوى ومقدار الحيوية • ثم أخذ نسب ثابتة مـــن هذه الحويصلات الحية وتم استخدامها في عدوى صغار الحمام وكان متوسط نسبة الاصابة ٧٥ر٦٪ ووجدت التريماتودا من نوع الدايجينيا كان نوعا واحدا تم الحصول عليه بعـــد أخذ النسيج المبطن للأمعاء وفحصه بعد اسبوعين من تاريخ العدوى وكانت تمثل نـــوع البروهيمستومم فيفاكس •

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SOME STUDIES ON METACERCARIAL INFECTION IN SCHILBE MYSTIS FRESH WATER NILE FISH AT SOHAG PROVINCE EGYPT EXPERIMENTAL INFECTION IN SQUABS FEED WITH VIABLE METACERCARIAE OF P.VIVAX

(With 2 Tables & One Plate)

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SUMMARY

Isolated viable metacercariae were collected from a heavly and moderately infected Schilbe mystis at Sohag province. These metacercarial cysts were submitted to prove the viability and the infective power. Constant number of viable metacercariae were fed to one week old squabs. The recovery rate was 6.75%. The digenetic trematode recovered from the intestinal mucosa two weeks post infection is Prohemistomum vivax, SONSINO, 1892.

INTRODUCTION

Larval parasitic fish infection to day has played a specific role in fish tissues (MAHMOUD, 1983) that hyper infection may couse functional damage when the active tissue was displaced by the encysted parasite (JOHN, 1966) and (HAN PAPERNA, 1980). It will be obvious that these parasites in fresh water Nile fish are more important than the parasites which are merely attached to the fish surface (HAN PAPERNA, 1980). Fish food consumers have expressed much hazards upon eating larval digenetic stages in the musculature of several food fishes cought in local waters. Public health interest among these parasites localized in tissues yields to clear the role played by these types of Nile fish in transmitting parasitic diseases through possibilities of infection to human, animals and birds. Our studies on Schilbe mystis fresh water Nile fish a common species in markets of Sohag province proved to be heavily infected with metacercariae of unknown trematodes, MAHMOUD, et al. (1987). Our aim in the present work is to infect squabs by feeding them on encysted metacercariae to recover adult worms.

MATERIAL and METHODS

A total of 70% fresh heavily and moderately infected Schilbe mystis. Fish was collected from Sohag Province markets looking for viable metacercarial cysts. The isolated viable metacercariae from tissues and organs were asserted with compression technique (MORISHITA, et al. 1965) then submitted again to the digestive technique to recover the motility and viability (HAN PAPERNA, 1980). The highly active metacercariae were picked up and fed to squabs

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of one week old (MARTIN and KUNTZ, 1955) at a rate of 100 metacercariae per squab. Faecal examination was done using sedimentation technique for samples 10 squabs (8 squabs used in experiments, 2 squabs served as control fed with parasite free ration). Eggs released in faecal samples were recovered two weeks post infection. The eggs were fixed with formol-saline 10% and measured. The squabs were immediately sacrificed and the adult trematodes were recovered by intestinal mucosal membrane scraping. Recovered digenetic trematodes were fixed with formol-saline 10%, then stained with acid alum carmine, identified and drawn with the aid of camera lucida.

RESULTS

1- Experimentally isolated digenetic trematode is identified according to YAMAGUTI (1958). Prohemistomum vivax SONSINO, 1892. Plate 1.

2- Average measurments in millimeters for adult recovered from one week old squabs experimentally infected with isolated viable metacercariae. Table, 1.

3- Result of feeding isolated viable metacercariae to one week old squabs Table, 2.

Family	Cyathocotylidae	POCHE, 1926.
Sub-family	Prohemistomum	LUTZ, 1935.
Genus	Prohemistomum	ODHNER, 1913.
Species	P. vivax	SONSINO, 1892.

Generic diagnosis:

Body not bipartite, oval with deep ventral pouch, in which comparatively small tribocytic organ with median slit is situated at middle of body. No dorsoterminal appendage. Acetabulum well developed. Testes tandom, Cirrus pouch well developed, genital pore subterminal. Ovary submedian or lateral, in zone of anterior testis. Vitelline follicles fairly large, confined to post acetabular region lateral and posterior to tribocytic organ. Parasitic in Raptatores, experimentally in cats and dogs. Genotype, Prohemistomum vivax SONSINO, 1892.

DISCUSSION

In the present work the prepatent period is more or less similar to that recovered by FAHMY, et al. (1976) who fed puppies and kittens with metacercariae. These findings indicate that the prepatent period is the same in different hosts. The dult trematodes recovered coincides with the findings of FAHMY, et al. (1976). Accordingly the change of different hosts did not affect the morphological characters of the worms. The identification was done according to systematic diagnosis by YAMAGUTI (1958). The recovery rate in the present study (6.75%) is lesser than the recovery rate (8.27%) recorded by MAHMOUD (1983). Who fed the metacercariae to cats and dogs. This indicates that the cats and dogs are the naturally suitable hosts than squabs which are not fish eaters. In addition the parasite may need more acidic fluid to grow well to the mature stage as the case with dogs and cats. Human beings may be susceptable in the same way as dogs and cats. However, human beings do not feed on raw fishes, that is why the incidence appears to be very low in human beings.

Our results explained that squabs are easily used as experimental hosts for fish parasites and more sensitive than newly hatched one day old chicks and it is the first time to use squabs as new hosts in experimental infections.

In the present study, P.vivax is isolated from infected newly hatched squabs two weeks post infection. This parasite morphologically coincides with the morphological characters of the parasites isolated from dogs and cats fed on different fish species (Tilapia nilotica, T. zilli, Mormyrus kannume, Schilbe mystis, Clarias lazera, Hydrocyon forskali and Alestes nurse) collected from Cairo markets (MAHMOUD, 1983). The parasites appear to have a public health significance as explained by NASR (1941) who isolated the parasite from the small intestine of man.

In new localities as Sohag province, the present authors could isolate this parasite from experimentally infected newly hatched squabs. The ecology of this parasite was studied by FAHMY, et al. (1976) who found that Cleopatera bulimoids snail was a usual intermediate host for P.vivax since it released Cercaria vivax which encysts in the tissues of the fresh water fish in Upper Egypt.

REFERENCES

Fahmy, M.A.M.; Mandour, A.M. and El-Naffar, M.K. (1976): Successful infections of dogs and cats by Prohemistomum vivax Sonsino, 1892 and Haplorchis yokogawai Katsuta, 1932. J. Egypt. Soc. Parasit., 6: 77-82.

Han Paperna, H.S. (1980): Parasitic infection and diseases of fish in Africa FAO. CIFA. Technical paper, 7: 51-62.

John, D.S. (1966): Fish and fish inspection. 2nd edition, H.K. Lewis and Co - itd University press, London.

Mahmoud, N.A.M. (1983): Parasitic infestations of some Native species of fishes in Cairo markets with special reference to parasites transmissible to man and animals. Thesis presented for the degree of M.V.Sc. Cairo University.

Mahmoud, N.A.M.; F.A. Abd El-Salam and A.F. Abd El-Gawad (1987): Some studies on Metacercarial Infection In Schilbe mystis Fresh water Nile Fish At Sohag province, Egypt. Encidence and morphological characters for Metacercarial infection (in press).

Martin, W.E. and Kuntz, R.E. (1955): Some Egyption Heterophyid trematodes. J. Parasit., 41, 4: 374-382.

Morishita, K.; komiya, Y. and Matsubayashi, M. (1965): Progress of Medical Parasitology in Japan Vol. 1, Vol. 11, Magura Parasitological Museum, Tokyo.

Nasr, M. (1941): The Occurance of Prohemistomum vivax infections in man with redescription of the parasite. Lab. and Med. prog., 2: 135-149.

Yamaguti, S. (1958): Systema Helminthum. The digenetic trematodes of Vertebrates. Part: 1, inter science Publishers. Ing., New York, Part: V, 865-951.

Table (1)

Average measurements in millimeters for adults recovered from one week old Squab

Digenetic species	Body		Oral sucker		Ventral sucker		Pharynx		Oesophagus		Testis		Ovary		S.V.	
	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W
Prohemistomum vivax	1.057	0.60	0.090	0.750	0.060	0.045	0.075	0.045	0.045	0.045	0.11	0.075	0.75	0.060	0.36	0.075
Eggs+																

Eggs+ (0.207 - 0.066) Oval in shape, yellow in colour, large in size, operculated.

L = Length W = Width S.V. = Seminal vesicle.

Table (2)

Results of feeding isolated viable metacercariae to one week old Squabs

Fish species	Number of Experimentally infected squabs	Number of Control free Squabs	Number of metacercarial cysts fed	Number of worms recovered	Total recovery rate
	Number				
Schilbe mystis	1 Squab		100	7	7
	2 "		100	6	6
	3 "		100	8	8
	4 "		100	6	6
	5 "		100	7	7
	6 "		100	7	7
	7 "		100	10	10
	8 "		100	3	3
Total	8	2	800	54	6.75

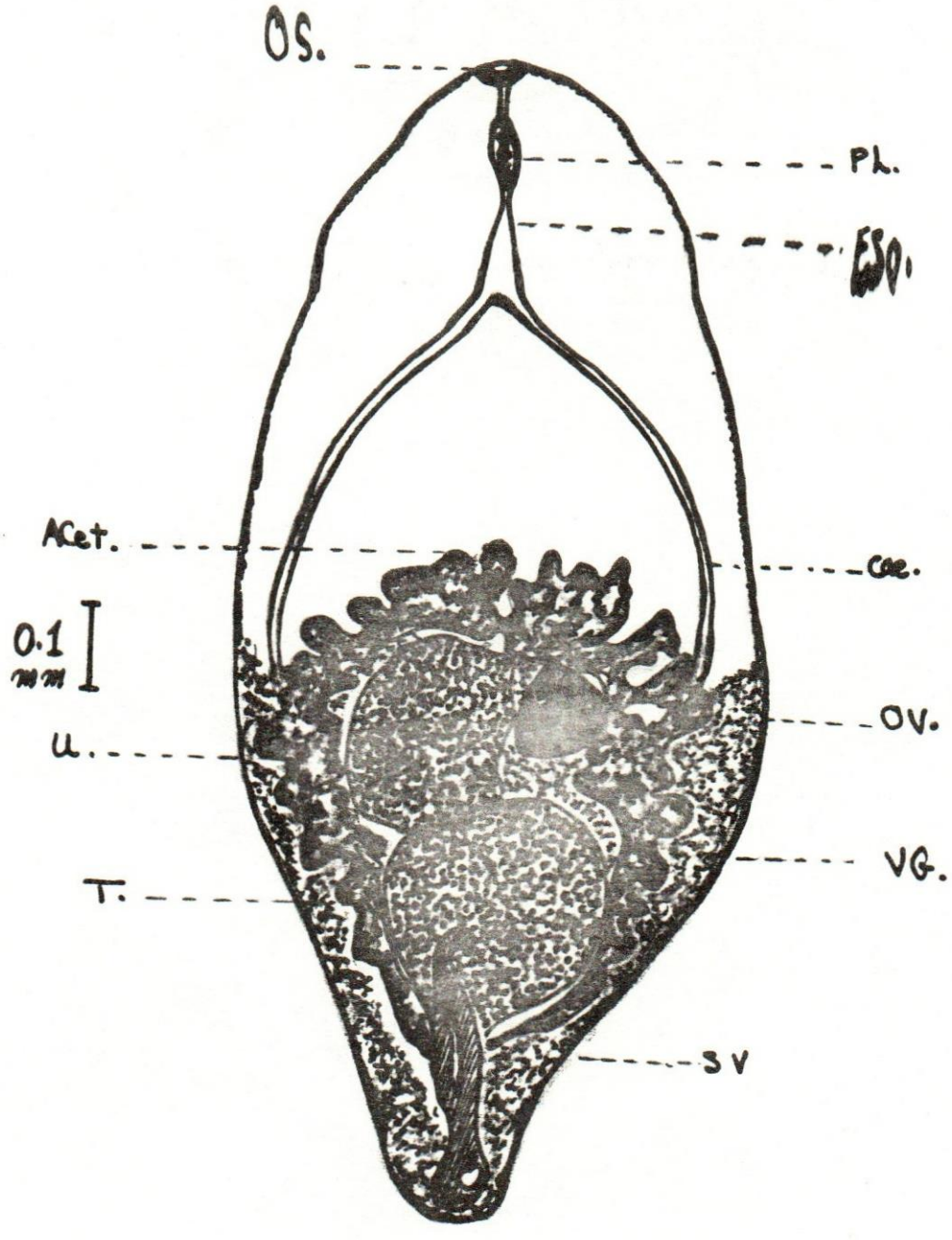

Plate 1 - *Prohemistomum vivax* (Sonsino, 1892)