

قسم : الأسماك •

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بعض الدراسات على الميتاسركاريا المتحصلة في أسماك الشلبة النيلي

### بمحافظة سوهاج

٢- دراسة على تأثير الاحماض المنزلية المخففة على حيوية الميتاسركاريا لديدان

سنتودورا ترايديكنيلا ، بروهيمستوم فيفاكس

نشأت عبدالمتعال ، فوزي عبدالسلام ، أحمد عبدالجواد

درس الباحثون تأثير الاحماض المختلفة على حيوية الميتاسركاريا مثل حامض

الخليك المخفف التجاري ٦% وكذلك حامض الليمونك " عصارة الليمون " لديدان  
استكتا سنتودورا ترايديكنيلا بروهيمستوم فيفاكس الموجودة بين عضلات سمك  
الشلبة النيلي بمحافظة سوهاج ، وقد تم التأكد من كون الميتاسركاريا حية أو ميتة  
بفحصها ميكروسكوبيا وبعدها الكتيبت الصغيرة •

اتضح من الدراسة أن حامض الخليك أكثر تأثيرا من حامض الليمونيك على حيوية  
الميتاسركاريا وقورنت النتائج المختلفة بالاحماض واتضح أن نسبة التركيز من حامض  
الخليك ١٠٠%، ٥٠%، ٢٥% تودي الى قتل كل الميتاسركاريا ، أما نسبة ٥%، ١%، ٥%  
و ٢٥% من نفس الحامض تودي الى قتل ٢٥%، ١١%، ٥%، ٢% على التوالي • أما  
نسبة تركيز حامض الليمونيك ١٠٠%، ٥٠%، ٢٥%، ٥% أدت الى قتل كل الميتاسركاريا  
أما نسبة ١%، ٥%، ٢٥% من نفس الحامض أدت الى قتل ١٨%، ١١%، ٩% على التوالي •

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**SOME STUDIES ON METACERCARIAL INFECTION IN  
SCHILBE MYSTIS FRESH WATER NILE FISH AT  
SOHAG PROVINCE, EGYPT  
THE EFFECT OF HOUSE HOLD DILUTED ACIDS ON THE  
VIABILITY AND INFECTIVITY ON THE METACERCARIAE  
OF STICTODORA TRIDACTYLA MARTIN & KUNTZ, 1955 AND  
PROHEMISTOMUM VIVAX SONSIND, 1892  
(With One Table)**

By  
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**SUMMARY**

The effect of house-hold diluted acids on the metacercariae of Stictodora tridactyla and prohemistomum vivax infecting the Nile fresh water fish Schilbe mystis in Sohag province is studied. The effect of Acetic acid (commercial venjar, 6%) was found to be more drasting than the effect of Citric acid (Lemon juice). Results of such work lead to the conclusion that the dilutions of Acetic acid (100%, 50%, and 25%) were lethal to all metacercariae exposed for 24 hs. On the other hand, the dilutions of acetic acid (5%, 1%, 0.5% and 0.25%) were lethal to 25%, 11%, 5% and 2% of exposed metacercariae respectively. The dilutions of Citric acid (100%, 50% 25% and 5%) were lethal to all metacercariae exposed for 24 hs. On the other hand, the dilutions of Citric acid (1%, 0.5%, and 0.25%) were lethal to 18%, 11% and 9% of exposed metacercariae respectively. Test of the viability and infectivity of the metacercariae was done by microscopic examination but also by experimental infection in domestic fowls.

**INTRODUCTION**

Schilbe mystis is a relatively common fish which is consumed in large quantities due to its relatively cheaper price than other fish species. NASR (1941) showed that Prohemistomum vivax was the cause of death in a human case. Other haplorchid parasites were also recorded to infect man (WATSON, 1960). Nevertheless, some other intestinal trematodes are now belived to be transmissible to man through the agency of fish.

During the course of this study, the present authors found that Schilbe mystis is parasitized by the metacercariae of Stictydora tridactyla MARTIN & KUNTZ (1955) and Prohemistomum vivax SONSIND, (1892). Therefore, the present authors studied the effect of different dilutions

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of House-hold acids which commonly used in the House-hold life on these fishes, aiming to find their effect on the encysted metacercariae of the mentioned parasites instead of Freezing and Salting FAHMY, *et al.* (1980), Freezing and Grilling YOUSSEF, *et al.* (1981) which take a time longer than 24 hs.

## MATERIAL and METHODS

### Fish:

A total of 100 *Schilbe mystis* Nile fresh water fish was collected from Sohag Province markets, apparently healthy and fresh. External examinations are carried on body surface, gills, mouth, eyes, and fins to prove the metacercarial localization JOHN (1966). By compression technique method, metacercariae are obtained and examined microscopically by using snips of muscles from the area near the dorsal fins and tail MORISHITA, *et al.* (1965). The obtained viable metacercariae are used for experiments.

### The house-hold diluted acids:

The following acids commonly used in House-hold life were chosen in the usual concentrations applied. They are sold under the trade names, Lemon juice (Citric acid), commercial venjar (Acetic acid 6%). Dilutions were prepared from each acid using distilled water beginning with 100%, 50%, 25%, 5%, 1% 0.5% and ending with 0.25%. The solutions were freshly prepared just before each experiment. Room temperature ranged from 28-30°C.

### Proceedure:

A clean, dried, small petri-dishes were prepared filled with Five ml of each House-hold acids dilutions and 100 cysts of metacercariae per petri-dish, i.e. 7 petridishes for each experiment.

Viable metacercariae were found to be transparent, double wall, containing active (motile) larvae. These petridishes were covered by its cover and left for 24 hs. at Room temperature. A control test for each dilution of the tested compounds was prepared by adding 5 ml of distilled water instead of dilutions. After 24 hs. exposed period, the viability and infectivity of metacercariae were determined not only by microscopic examination but also by experimental infection of newly hatched chicks (One day old chicks). After 15 days the control and the experimentally infected newly hatched chicks were sacrificed looking for and counting the raised adults of the parasites.

## RESULTS

Effect of Acetic Acid (commercial venjar, 6%), when the exposure time was 24 hs. At 100% (6%), 50% (3%), 25% (1.5%), the death rate was 100%. At 5% (0.3%), 1% (0.06%), 0.5% (0.03%) and 0.25% (0.015%). The death rate was decreased from 25%, 11%, 5% and 2% respectively. On the other hand, the recovery rate was increased from 29.33, 38.20, 50.52 and 57.14 respectively (Table 1).

The effect of Citric Acid (Lemon juice), when the exposure time was 24 hs. At 100%, 50%, 25% and 5%, the death rate was 100%. At 1%, 0.5% and 0.25%, the death rate was decreased from 18%, 11%, and 9% respectively. On the other hand, the recovery rate was increased form 37.80, 47.19 and 58.24 respectively (Table 1). The dead metacercariae were shrunken with a dark colour, and a good space between it and the cyst wall.

## EFFECT OF ACIDS ON METACERCARIA

## DISCUSSION

According to the data shown in Table 1, the present authors could conclude that there is a little variation between the effect of Acetic Acid (commercial vinegar, 6%) and the Citric Acid (Lemon juice). The death rate among the metacercariae of Stictodora tridactyla and Prohemistomum vivax exposed for 24 hrs was more pronounced by Acetic Acid than Citric Acid. The present study is therefore, done for the first time in Egypt.

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Table (1)  
The effect of House-hold Diluted Acids on the viability and infectivity  
on Metacercariae of Stictodora tridactyla Martin & Kuntz, 1955  
and Prohemistomum vivax Sonsino, 1892

House-hold Acids Dilutions	Number of cysts per. dish	Number of movable larvae per dish	Percent of Viability	Number of cyst per chick	Number of worms recovered per chick	Percent worm recovery
<b>I- Acetic Acid</b> (commercial, 6%)						
100% (6%)	100	-	-	-	-	-
50% (3%)	100	-	-	-	-	-
25% (1.5%)	100	-	-	-	-	-
5% (0.3%)	100	75	75	75	22	29.33
1% (0.06%)	100	89	89	89	34	38.20
0.5% (0.03%)	100	95	95	95	48	50.52
0.25% (0.015%)	100	98	98	98	56	57.14
Control	100	100	100	100	95	95.00
<b>II- Citric Acid</b> (Lemon juice)						
100%	100	-	-	-	-	-
50%	100	-	-	-	-	-
25%	100	-	-	-	-	-
5%	100	-	-	-	-	-
1%	100	82	82	82	31	37.80
0.5%	100	89	89	89	42	47.19
0.25%	100	91	91	91	53	58.24
Control	100	100	100	100	90	90.00

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 on the ... ..  
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Year	Value	Year	Value	Year	Value
1932	100	1933	100	1934	100
1935	100	1936	100	1937	100
1938	100	1939	100	1940	100
1941	100	1942	100	1943	100
1944	100	1945	100	1946	100
1947	100	1948	100	1949	100
1950	100	1951	100	1952	100
1953	100	1954	100	1955	100
1956	100	1957	100	1958	100
1959	100	1960	100	1961	100
1962	100	1963	100	1964	100
1965	100	1966	100	1967	100
1968	100	1969	100	1970	100
1971	100	1972	100	1973	100
1974	100	1975	100	1976	100
1977	100	1978	100	1979	100
1980	100	1981	100	1982	100
1983	100	1984	100	1985	100
1986	100	1987	100	1988	100
1989	100	1990	100	1991	100
1992	100	1993	100	1994	100
1995	100	1996	100	1997	100
1998	100	1999	100	2000	100
2001	100	2002	100	2003	100
2004	100	2005	100	2006	100
2007	100	2008	100	2009	100
2010	100	2011	100	2012	100
2013	100	2014	100	2015	100
2016	100	2017	100	2018	100
2019	100	2020	100	2021	100