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HAEMATOLOGICAL AND BIOCHEMICAL STUDIES ON THE EFFICACY OF SYNANTHIC^(R) AGAINST GASTRO-INTESTINAL PARASITES IN SHEEP (With 2 Tables & 1 Fig.)

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(Received at 24/3/1990)

دراسة دموية وبيركيماوية على تأثير استخدام السينانتيك كطارد للديدان
المعوية في الأغنام
شروت عبدالعال

أُعطي عقار السينانتيك لعدد أربعين من النعاج التابعة لمزرعة الجيش بمنقباد وكانت تعاني من
الاصابة بالديدان المعوية وتم التأكد من ذلك معملياً. أخذت عينات من البراز والدم من الأغنام قبل
وبعد إعطائها العقار وتم تحليل الصورة الدموية شاملة عدد كريات الدم الحمراء والبيضاء ونسبة من
الهيموجليبين والكريات الصمغة وكذلك العدد التصنيفي لكريات الدم البيضاء. كما وانه تم تحليل مصل
الدم للعناصر النادرة شاملة عناصر الزنك والمنجنيز والنحاس والموليبدنيم والحديد الكلي وتم اجراء
التحليل والمقارنات الاحصائية قبل وبعد اعطاء العقار.

SUMMARY

A total number, of 40 Balady sheep belonged to Manquabad military farm were included in this investigation to study the efficacy of synanthic^(R) as antiparasitic drug. Haematological studies revealed the presence of oligocythaemia (normocytic normochromic anaemia) associated with eosinophilia in infested sheep with highly significant ($P/0.01$) decrease in the levels of blood serum zinc, copper, manganese, iron and total iron binding capacity if compared with non-infested ones. Blood serum molybdenum level showed a non-significant variations. The study declared the efficacy of synanthic as efficient treatment and can overcome parasitic infestation in sheep.

(R) Synanthic (oxfendazole) Synrex Agribusiness distributed by Al-Kamel import office Zeiron, Cairo, Egypt.

INTRODUCTION

Helminthiasis is often incriminated as a major parasitic problem affecting blood forming system and is one of the major causes of lowered blood values especially in small ruminants (SCHALM, 1979).

Trichostrongylosis in lamb reduced their daily feed consumption with consequent rapid loss of body weight and the onset of diarrhoea followed by weakness and death within relative short time (ANDREWS, *et al.* 1944 and GEORGE and LANDRAM, 1959).

Mineral deficiencies induced by gastro-intestinal parasites in sheep were studied by many investigators (EL-HETW, *et al.* 1975, WEGGER, 1980 and SADDEK, 1983). WEGGER (1980) reported that mineral deficiencies induced by intestinal parasitic infestation is the result of impaired absorption or increased excretion of concerned elements.

Field trials upon the usage of oxfendazole upon gastro-intestinal parasites under various conditions were studied by LEIMBACHER, *et al.* (1976); DOWNEY' (1977) and MOURAD, *et al.* (1989).

The aim of the present investigation is to throw light upon the efficacy of Synanthic^(R) on gastro-intestinal parasites in sheep and its reflection upon both haematological picture and some blood serum trace elements constituents.

MATERIAL and METHODS

A total number of 40 Balady naturally infested sheep with gastro-intestinal (Trichostrongylidae) parasites in Manquabad, Assiut Governorate constitute the material of this investigation. The efficacy of synanthic as antiparasitic drug in oral dose of 1 ml/4.5 kg. B.Wt. was performed. Blood and faecal samples were collected before and after administration of the drug by 7 and 15 days, but faecal samples extended to 28 and 35 days post administration of the drug.

Haematological picture:

Anticoagulated blood (E.D.T.A.) was used for haematological studies using automatic cell counter*. Others blood parameters were estimated according the standard methods of haematology (COLES, 1986).

* Electronic cell counter (Cell Dyne 300 Sequoia Turnor).

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Parasitological examinations:

Faecal^(R) samples were collected 7, 15, 28 and 35 days after administration of Synanthic^(R). Daily egg count have been performed according to the Manual Veterinary Parasitological examination (1971).

Biochemical analysis:

Blood serum were analysed for zinc, manganese, copper, molybdenum, iron and total iron binding capacity levels. Blood serum zinc and manganese levels were determined using Atomic Absorption Machine. Blood serum copper, molybdenum, iron and total iron binding capacity were respectively determined after the methods of ZAK (1958); SENDELE (1944) and PICCARDI, *et al.* (1972). Statistical analysis of data were performed using T-test (KALTON, 1967).

RESULTS

Mean values of haematological picture and trace elements variations are illustrated in table (1 & 2) and Fig. (1). Parasitological examination of faecal samples by different methods revealed the presence of trichostrongylidae eggs with a mean values of 1890 eggs/gm before treatment which have been reduced to zero post administration of the drugs by 7 days.

DISCUSSION

Oligocythaemia (normocytic normochromic anaemia) associated with eosinophilia were evident in diseased sheep (Pre-treatment) if compared with healthy one (Post-treatment). The obtained data coincided with those previously obtained by BAKER and DOUGLAS (1966); SCHALM (1979) and COLES (1986). BAKER and DOUGLAS (1966) attributed the presence of anaemia associated with parasitic infestation due to shortening of the life of erythrocytes, impaired erythropoiesis and reduction of the amino acid pool. Values, however, returned to normal levels 10 days post treatment.

Periodical faecal examination revealed complete absence of gastro-intestinal parasites after 7 days from drug administration. The obtained results may be attributed the efficacy of this anthelmintic which is judged by qualitative and quantitative determination of eggs pre and post-drug application.

The picture of the blood and levels of trace elements returned in dewormed animals to normal within 10 days. Similar effect was observed by too many investigators using different anthelmintics (ANDREWS, *et al.* 1944; LEIMBACHER, *et al.* (1976); BAKER and FISK (1977); JHON (1977) and MOURAD, *et al.* (1989).

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Highly significant decrease ($P/0.01$) in the blood serum levels of zinc, manganese, copper, iron and total iron binding capacity were evident in infested sheep if compared with treated ones. Meanwhile, a non-significant variation was detected in blood serum molybdenum level in both infested and treated sheep. The obtained data agreed with those previously obtained in sheep in similar conditions by AWAD, et al. (1975); EL-HETW, et al. (1975); FAHMY, et al. (1980); IBRAHIM (1980); ABD EL ALL (1983) and SADDEK (1983).

Reduction in trace elements levels in diseased sheep if compared with treated ones can be explained by the fact that parasitic infestation leads to loss of appetite with consequence of great loss in blood (KANEKO and CORNELIUS, 1970). Also, WEGGER (1980) attributed the decrease in minerals level in parasitic infestation to impaired absorption or increased excretion of concerned elements.

Finally, it would be concluded that synanthic^(R) is efficient and can overcome parasitic infestation in sheep with a significant effect on both haematological picture and levels of blood serum trace elements. Where both returned to normal after deworming of the tested animals.

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Table (1)
Mean values of haemogram picture pre and post
treatment with synanthic.

Parameters/Units	Pre-treatment	Post-treatment
T.R.B.Cs T/L	6.25+0.04**	8.77+0.09
T.W.B.Cs G/L	9.9 \pm 1.4	12.4 \pm 2.2
P.C.V. %	29.5 \pm 0.8	32.3 \pm 1.4
Hb Gm/L	111.2 \pm 0.64*	114.2 \pm 3.8
MCV U ³	46.8 \pm 8.35**	36.7 \pm 9.18
MCHC %	37.69 \pm 6.18	35.36 \pm 3.12
D.L.C. %		
Band Cell	1.6 \pm 0.3	3.4 \pm 0.7
Neutrophils	25.4 \pm 1.5	33.2 \pm 4.3
Eosinophils	11.0 \pm 1.7**	4.4 \pm 0.7
Basophils	1.4 \pm 0.09	2.0 \pm 0.09
Lymphocytes	53.0 \pm 3.9	51.4 \pm 4.1
Monocytes	7.6 \pm 0.6	5.6 \pm 0.5

* : Significant (P/ \leq 0.05)** : Highly significant (P/ \leq 0.01)

Table (2)
Mean values of blood serum trace elements
pre and post treatment with synanthic

Element/units	Pre-treatment	Post-treatment
Zinc ug %	125.5 \pm 25.3**	142.8 \pm 23.4
Manganese ug %	1.4 \pm 1.01**	3.7 \pm 1.4
Copper u mol/L	7.21 \pm 0.9**	19.21 \pm 1.4
Molybdenum ug %	2.44 \pm 0.3	4.21 \pm 0.6
Iron u mol/L	10.23 \pm 2.3**	23.38 \pm 5.4
Total iron binding capacity u mol/L	28.9 \pm 4.5**	96.8 \pm 31.5

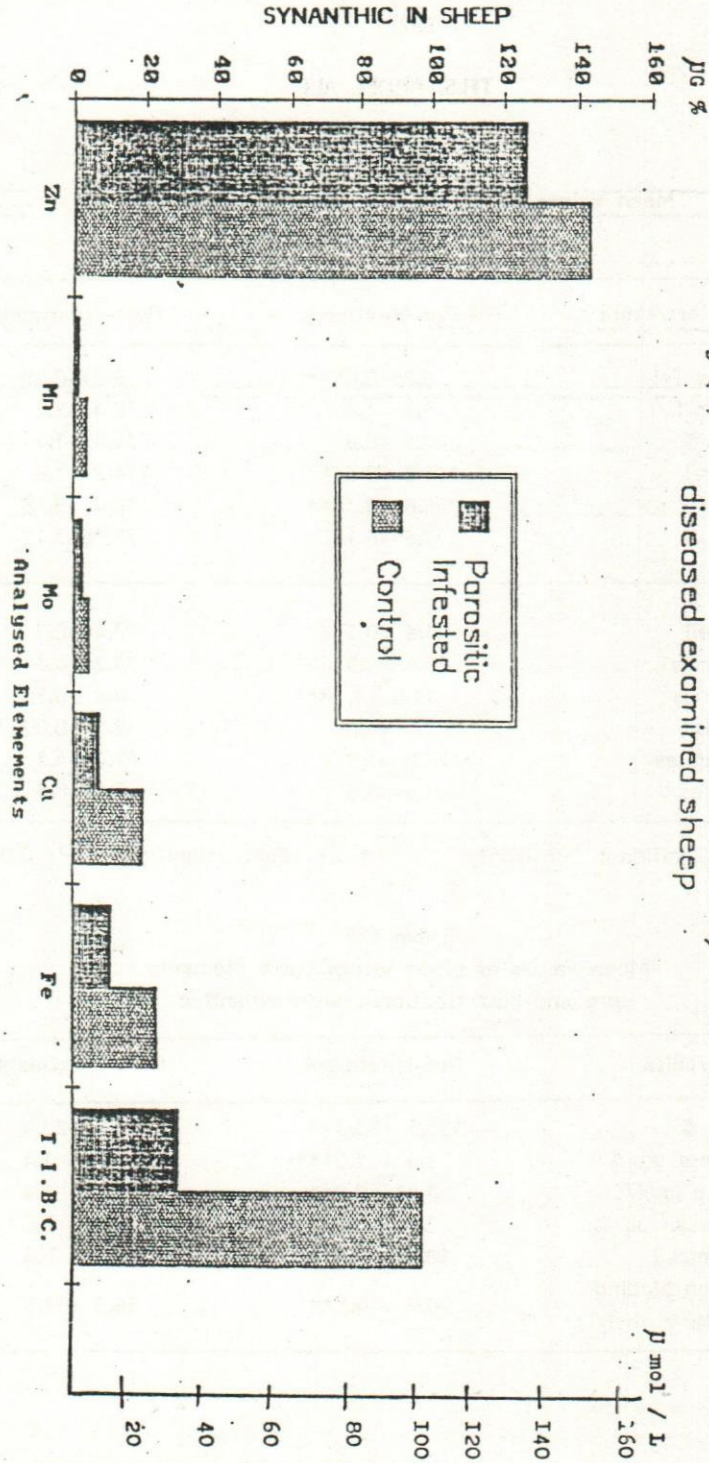


Fig.(1): Trace elements levels in healthy and diseased examined sheep