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تأثير الهرمون الكورتيزوني

(ترای امثينولون اثيتونيد)

على كرات الدم البيضاء في الاغنام

حمد ى ابراهيم ، محمد كرام ، ثروت نافع ، ثروت عبد العال

استهدف البحث تأثير احد مركبات الكورتيزون (ترای امثينولون اثيتونيد) على العد الكلي والتصنيفي لكرات الدم البيضاء في الأغنام السليمة ، وذلك عن طريق حقن المركب بعمق في عضلات الفخذ .

وقد اتضح مايلي :-

١- زيادة ملحوظة في العد الكلي لكرات الدم البيضاء في الحيوانات المحقونة عما قبل الحقن .

٢- زيادة في العد التصنيفي للخلايا المتعادلة والآحادية .

٣- نقص في العد التنصيفي للخلايا الحمضية والليمفاوية.

وباستمرار الحقن للمركب السابق بنفس الجرعة لمدة خمسة أيام أظهرت الحيوانات نفس الاستجابة السابقة.

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THE INFLUENCE OF SYNTHETIC CORTICOSTEROID HORMONES (TRIAMCINOLONE ACETONIDE) UPON CIRCULATING LEUCOCYTES IN SHEEP*

(with Two Tables)

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SUMMARY

the effect of intramuscular injection of corticosteroids on the level on the level of circulating of total and differential leucocytic count in normal sheep was studied. Sheep responded to single treatment with corticosteroids by marked leucocytosis, neutrophilia and monocytosis. Lymphocytes and eosinophils numbers were substantially reduced. Continued treatment with the same drug for 5 days, animals shown a similar responses.

INTRODUCTION

Natural and synthetic corticosteroid hormones were commonly used in therapy of many sheep diseases as pregancy toxaemia, eczema, dermatitis, hepatitis, arthritis and allergic conditions (BLOOD and HENDERSON, 1974). On the other hand BRANSOME (1968) and PRUNTY (1962) investigated that corticosteroids production in the body were stimulated under stress conditions including those of infection, parasitism, trauma, cold, freat, starvation, allergic and emotional stresses. These stresses full stimuli and activate anterior lobe of the pituytary gland to secrete ACTH which, in turn stimulate adrenal cortex to release its secretory products into the blood stream. Corticosteroid in general are potent inhibitors of the inflammatory reactions. This antiiflammatory action includes inhibition of the vascular margination of leucocytes, of the migration of leucocytes from the capillaries and of the formation of fibrin and accumulation of oedema fluid with subsequent increase in their amount in the peripheral blood (LATUER, 1975). ARCHER (1959) reported that any increase in the level of adrenal cortical steroids resulted in the level of adrenal cortical steroids resulted in a marked eosinopenia in mice and dog. PERVY, GRADDOCK and LAWERENCE (1958) found lymphopenia in dogs and cats after experimental adminstration of corticosteroids.

The aim of this work is to elucidate clearly the effect of corticosteroids upon the leucogram of sheep.

MATERIALS and METHODS

Five mature non pregnant female sheep aged 2 4 years, weighing between 40 - 50 Kg. were used for studying the effect of corticosteroids on WBCs of the blood. Anticoagulated blood samples were obtained early in the morning before treatment by intramusular injection with corticosteroids (40 mg/ I/M for each animal). The samples were collected at intervals of 2 hrs. for the first 10 hrs., the final samples being taken after 24 hrs. in the short term effect of the drug.

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To study the effect of long term adminstration, corticosteroid was given intramuscular injection at a dose of 40 mg every 24 hrs. for five days. Blood samples were collected daily in the morning over a period of 10 days. Total and differential leucocytic count were performed by COLES (1974). Statistical analysis of data was performed according to SNEDECOR, (1967).

RESULTS

The total and differential leucocyic count in short term application of corticosteroids are shown in table (1), while long sterm effect are shown in table (2).

DISCUSSION

The leucogram response in sheep in short term treatment corticosteroids (tab. 1) showed increase in number of leucocytes within 4th and 6th hours post inoculation, after which the values returned to the normal levels. This agree with the findings of LATNER, (1975). This transit leurocytosis was principally due to neutrophilia, and in part to monocytosis. The neutrophils were markedly increased at the 4th hrs. post inoculation reaching a peak at 6th hours, and then returned rather quicklytowards normal values. The reported neutrophilia came from two sources, the first from previously collapsed cappillary beds which have been flushed out by increased heart action, and the second from the bone marrow "Pool" of mature stored neutrophils (FURNESS, 1959). Monocytosis was appreciable at 4th and 6th hrs. Post inoculation. The increased number of monocytes could be attributed to the reduction of circulating histamine as a result of increased corticosteroid levels (SCHALM, 1962).

Lymphopenia reached its maximum levels at 4 - 6 hrs. post inoculation. this decrease in lymphocytes number may be due to lysis of lymphocytes and failure of their deluiary into the circulation (GORDON, 1955).

Eosimopenia was clearly manifisted between 4 - 6 hrs. post inoculation. Such decrease in eosinophils may be attributed to their leaving of the blood stream to enter attributed to their leaving of the blood stream to enter the tissues (BIGGART, 1932).

Basophils in peripheral blood were not affected with .corticosteroids injection. Screening the number of both total and differntial count in the short term effect of corticosteroid in the studied animals (Tab. 1), indicated tht their level appered normal values by 24 hrs. post inoculation.

Long term treatment with corticosteroid for 5 days (table , 2) showed gradual increase in total leucocytic count, neutrophils as well as monocytes. The peak count being obtained at 2nd and 4th day post inoculation, after which the count tend to fluctuate near the pretreatment levels. On the other hand lymphocytes and oesinophil counts were reduced with 4 days of treatment. After stopage of corticosteroid injections the count gradually increased to reach the normal values by 9th day.

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Table (1)

Changes in circulating leucocytes in sheep following single treatment wih corticosteroid.

	Time	Total WBCs (G/L)*	Differential leucocytic count (DLC)**				
			Neutropnils	Monocytes	Eosinophils	Lymphocytes	Basophils
Before treatment		9.00 ± 0.99	3.200 ± 801	300 ± 111	500 ±122	4.800 ± 530	100 ± 27.7
After treatment	2 hrs	9.60 ± 0.73	3.800 ± 555	500 ± 122	400 ±111	4.100 ± 601	100 ± 19
	4 hrs	10.92 ± 1.1	5.800 ± 667	800 ± 123	420 ±123	3.800 ± 733	98 ± 23
	6 hrs	11.32 ± 0.68	5.800 ± 770	1000 ± 243	400 ±122	4000 ± 881	120 ± 23
	8 hrs	10.18 ± 0.37	4.300 ± 633	800 ± 173	470 ±131	4.500 ± 772	110 ± 12
	10 hrs	9.900 ± 0.5	4.300 ± 801	600 ± 122	500 ±145	4.400 ± 701	120 ± 11
	24 hrs	9.100 ± 0.68	3.500 ± 595	450 ± 116	550 ±133	4.500 ± 666	100 ± 17

* G/L = Giga/Liter = 10^9 / L.

** DLC in absolute values.

Table (2)

Changes in circulating leucocytes in sheep following 5 days therapautic treatment with corticosteriod.

Time		Total WBCs (G/L)*	Differential leucocytic count (DLC)**				
			Neutrophils	Monocytes	Eosinophils	Lymphocytes	Basophils
Before Treatment		9.000 ±0.99	3.200 ± 601	400 ±111	500 ±122	4.800 ± 536	100 ± 27.7
After treatment	24 hrs	9.100 ±0.68	3.500 ± 595	450 ±116	550 ±133	4.500 ± 666	100 ± 12
	2days	9.300 ±0.73	3.880 ± 267	600 ± 99	500 ±112	4.110 ± 780	120 ± 23
	3days	9.500 ±0.76	4.300 ±1.400	700 ±110	400 ±101	4.000 ± 437	100 ± 13
	4days	10.360 101	5.800 ±1.301	750 ± 91	400 ± 99	3.300 ± 300	110 ± 22
	5days	10.235 ±0.77	5.700 ± 554	800 ±113	420 ±101	3.200 ± 329	115 ± 25
	6days	10.050 ±1.01	5.500 ± 433	750 ±135	400 ± 89	3.300 ± 576	100 ± 33
	8days	9.510 ±0.97	4.300 ± 560	550 ±102	450 ± 99	4.100 ± 667	110 ± 25
	9days	9.100 ±0.75	3.600 ± 666	400 ±121	500 ±101	4.500 ± 722	100 ± 12
	10days	9.100 ±0.88	3.500 ± 788	450 ±110	530 ±122	4.500 ± 888	120 ± 23

* G/L = Giga/Liter = 10^9/L.

** DLC in absolute values.