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دراسة : تأثير مركبات الكورتيزون الصناعية (تراى اميثنولون اثيتونيد)* على بعض المركبات البيوكيميائية في مصل دم الاغنام

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اجرى هذا البحث لمعرفة تأثير المركبات الصناعية للكورتيزون (تراى اميثولون اثيتونيد) على خمس نعاج أغنام غير حوامل تزن مابين ٤٠ الى ٥٠ كيلو جرام.

تم حقن النعاج في العضل بجرعات ٤٠ مللي جم لكل واحدة يوميا ولمدة خمسة أيام متتالية. ووجد بعد الحقن أن خمائر الدم (ج . و . ت ، ج . ب . ت.) وكذلك نسبة الشحوم الكلية قد ازدادت زيادات معنوية وكذلك سكر الدم ، بينما حدث انخفاضا معنويا في النسبة الكلية للبروتين . اما بالنسبة الى خميرة الفوسفاتيز القاعدية فلم يحدث في نشاطها أى تغيير معنوى ، ولقد لوحظ أن جميع قيم النشاط البيوكيميائي للمواد السابقة قد عادت الى مستواها فيما قبل الحقن بعد خمسة أيام من حقن آخر جرعة.

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EFFECT OF SYNTHETIC CORTICOSTERIODS (TRIAMCINOLANE ACETONIDE) ON SOME BIOCHEMICAL PARAMETERS IN THE BLOOD SERUM OF SHEEP*

(With One Table)

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SUMMARY

An investigation on the effect of synthetic corticosteroid (Triamcinolone acetonide) was carried on five mature non pregnant ewes weighing 40 - 50 Kg. All ewes were injected intramuscularly Triamcinolone acetonide 40 mg daily for 5 days for every ewe.

A significant increase was recorded in GOT, GPT, total lipids and glucose of the blood serum, however, a significant decrease was seen in the total proteins after injection. No significant variation was recorded in the blood serum alkaline phosphatase activity. All investigated parameters returned to pretreatment values after 5 days post last injected dose.

INTRODUCTION

many synthetic corticosteroids have been introduced in veterinary practice, the anti-inflammatory and gluconeogenic potency of which are much greater than natural one (FORSHAM, et al., 1948).

REID (1960) suggested that pregnancy Toxamia in sheep is a diabetic like syndromes resulting from adrenocortical hypofunction coupled with severe undernutrition.

ROSEN, et al. (1958) reported that a significant increase in GPT activity occurred in the liver of animals treated with corticosteroids, however, the values of GOT in the treated animals were only slightly higher than those of untreated control animals. ROSEN et al. (1959) recorded that corticosteroids have a stimulatory infiuences upon the Glutamic Pyrovic Transaminase system. BRANSOME (1968) stated that the main physiological responces to treatment with cortico-steroids involve a rapid increase in the availability of glucose.

An initial effect of prolonged corticosteroid adminstration, reflected a negative nitrogen balance (CYRIAX and TROISER, 1953). On the other hand KANEKO and CORNELIUS (1971) found that chronic overdosage with corticosteroides lead to a decrese in muscle protein, oedema and fibrosis of muscle tissues.

The aim of the present study is to investigate the effect of the corticosteroid on some biochemical constituents in the blood serum of sheep.

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*: Triamcinolone acetonide produced by: SQUIBB EGYPT.

MATERIALS and METHODS

Five mature non pregnant female sheep weighing between 40 - 50 Kg. were used in the present study. All animals, were injected corticosteroid i/m at a dose rate of 40 mg daily for 5 days. Blood sample were taken from the jugular vein before, 1, 2, 3, 4 and 5 days post injection. The serum samples were obtained. Serum was analysed for determination of GOT and GPT according to Reitman and FRANKEL (1957). Alkaline phosphatase activity was determined by the method of SOMMER, (1954), total protein was by micromethod discribed by HENERY (1964), serum glucose by the method of WERNER, et al. (1970) and total lipids were determind by WEICHSELBAUM (1946).

RESULTS

It is evident from table (1) that corticosteroid injection to mature non pregnant femal sheep produced a significant increase in the blood serum of GOT, GPT, total lipids and glucose. On the other hand there was a significant decrease in the total blood serum proteins after injection. No significant differences could be noticed in blood serum alkaline phosphatase activity resulted from corticosteroid administration. All serum biochemical parameters in this study were returned nearly back toward pretreatment values after 5 days post last injected dose.

DISCUSSION

It is clear from the obtained results that corticosteriod (40 mg) injection to sheep induced a significant increase in both GOT and GPT activities. This could be explained according to ROSEN et al. (1959) who found that corticosteroids have a stimulatory influence upon the transaminase system. On the other hand FORSHAM, et al. (1948) attributed the increased liver transaminase activity to the increased rate of deamination and breakdown of tissues following corticosteroid administration.

Unsignificant variation could be detected in blood serum alkaline phosphatase. These results were in agreament with the findings reported by RASEN et al. (1959).

The significant decrease in the total protein level in the blood serum as a result of corticosteroid injection may be attributed to the stimulation of gluconeogenesis in the liver from proteins (ROSEN, et al. 1958). FORSHAM et al. (1948) proved that corticosteroid reduce the protein synthesis and sometimes increase the utilization of tissue proteins resulting in a state of negative nitrogen balance.

The total lipids were significantly increased as a result of corticosteroid injection, such increase in the total lipids in view of CYRIAX and TROISER 61963) was due to the increase of fat absorption from the intestine with subsequent stimulation of fat mobilization from its depots.

The increase in blood serum glucose level as a result of corticosteroid injection may be due to increased absorption of sugar from intestine and also increased resistance to insuline (REID, 1960). Another possible explaination for this increased serum glucose concentration may be due to depression of glucose uptake and its oxidation by tissues.

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Table (1)

Influence of corticosteroid injection on blood serum parameters of sheep.

Parameter	Before treatment	Days post treatment				
		1	2	3	4	5
GOT mu/ml	16.21 ± 1.31	22.9* ± 1.1	24.2* ± 1.01	25.22* ± 1.01	22.11 ± 0.8	18.13 ± 0.9
GPT mu/ml.	44.00 ± 3.91	51.22* ± 3.3	55.1* ± 4.1	55.23* ± 3.9	50.3* ± 4.01	47.01 ± 3.3
Alkaline phos. mu/ml	112.63 ± 22.46	113.33 ± 20.11	111.23 ± 12.3	113.43 ± 23.2	115.31 ± 21.1	114.32 ± 23.1
Total Protein gm/100 ml	5.72 ± 0.09	4.1* ± 0.11	4.2* ± 0.22	4.3* ± 0.13	4.5* ± 0.22	5.1 ± 0.11
Total lipids mg/100 ml	296.39 ± 23.12	335.13** ± 21.11	319.3* ± 20.22	322.4 ± 20.11	329.2* ± 18.9	311.2 ± 19.8
Glucose mg/100 ml	69.33 ± 9.2	85.1** ± 8.1	83.22** ± 7.3	82.33** ± 7.7	80.19* ± 11.1	76.21 ± 8.9

* $P < 0.05$

** $P < 0.01$