

تأثير أعطاء السيلينوم على وزن العجول ومض مكونات الدم

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تهدف هذه التجربة الى دراسة تأثير أعطاء السيلينوم (سيلينيت الصوديوم) على أوزان العجول قبل ومد العظام بالاضافة الى معرفة ماهية التغيرات الممكنة الحدوث بها في مستوى البروتين الكلى والنتروجين غير البروتينى واليوريس والكولستيرول الكلى في سيرم دم هذه الحيوانات ، ولقد أظهرت النتائج ان : أعطاء المركب المذكور في الجرعة المستخدمة قد سبب زيادة أوزان العجول في نهاية التجربة عند مقارنة هذه الأوزان بالزيادة التي حدثت في العجول التي لم تعامل كما وأنه لم تلاحظ أية تغيرات مرضية في مستوى مكونات الدم المذكورة .

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THE INFLUENCE OF SELENIUM ADMINISTRATION ON GROWTH
AND SOME BLOOD CONSTITUENTS OF CALVES
(With 3 Tables)

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SUMMARY

An experiment was carried out to investigate the influence of the oral administration of selenium on total serum protein, nonprotein nitrogen, blood urea and total serum cholesterol as well as the growth of unweaned and weaned calves.

The results obtained indicate that oral selenium administration improved growth and has no deleterious effect upon total serum protein, non-protein nitrogen, blood urea and total serum cholesterol.

INTRODUCTION

Selenium is necessary for growth in animals and for the prevention of various diseases which show variable responses to vitamin E. McLEAN et al. (1959) described the growth response to selenium in apparently normal lambs. BLAXTER (1961) found, in North Scotland that growth responses to selenium in lambs of the order of 5 - 10% were obtained from 3 mg selenium injection at 2 -weekly or 4 -weekly intervals. HARTLEY and GRANT (1961) reported that small oral selenium doses of 1 to 5 mg for lambs at weaning and 1 to 5 mg at 3-monthly intervals, substantially increased the lambing percentage and resulted in the production of more milk by ewes, heavier lambs and up to 20% more wool. MACE et al. (1963) found that on injecting sodium selenite and vitamin E to pregnant cows, 50-60

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days before calving, prevented weak, premature calves as well as the deaths of newly born-calves. OLDFIELD et al. (1963) investigated that small oral doses of sodium selenite, 1-5 mg administered to calves at weaning, would increase the total live-weight. WILSON (1964) stated that the ill-thrifty could be prevented by selenium treatment with striking increase in growth of sheep. ANDREWS et al. (1968) found, in parts of New-Zealand, a serious condition known as ill-thrift occurs in beef and dairy cattle of all ages and could be prevented by selenium administration. HILL et al. (1969) showed that, selenium administration to lambs increased their weight by 1.23 Kg. over that of control.

There is a lack of literature concerning the effect of selenium administration to calves. Its effect seems not to be fully investigated concerning total serum protein, non-protein nitrogen, blood urea and total serum cholesterol. The present study aims to investigate such effect on the above-mentioned blood serum components.

MATERIAL AND METHODS

Twenty calves (10 unweaned and 10 weaned) were divided into 4 group each of 5. All calves were weighed just before the beginning of experiment. Serum samples were collected to estimate the total serum protein, non-protein nitrogen, blood urea and total serum cholesterol.

Five unweaned and 5 weaned calves received 1 and 2 mg selenium (as sodium selenite) dissolved in 10 ml bidistilled water, respectively. Selenium doses were administered to calves once daily on 3 successive days at 11-days intervals.

Other unweaned and weaned calves were left without selenium administration to serve as control.

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After 6 weeks, duration of the experiment, all calves were weighed and serum samples were collected.

The technique adopted for the estimation of the total serum protein was after MacFATE (1972), while non-protein nitrogen and blood urea were determined as that of RAITSKA (1970). The method which was used for the estimation of total serum cholesterol was the same as ILCA (1962).

Investigated calves were put under clinical observation throughout the period of experiment. The animals were free from parasitic infestations.

RESULTS AND DISCUSSION

All results obtained from this experimental work are recorded in Tables 1, 2 and 3.

Table (1)
Weights of calves before and after the experiment

Calves	Weight (Kg)			
	Before	After	Difference	Gain %
Unweaned :				
experimental	40.3	56.2	15.9	39.45
control	64.2	78.2	14.0	21.80
Weaned :				
experimental	97.2	122.8	25.6	26.33
control	108.5	128.2	19.7	18.50

Table 2 : TSP, NPN, BU and TSC levels of unweaned calves

Calves	gm % TSP	NPN	mg % BUBU	TSC
Experimental:				
before	6.10 ± 0.87	24.12 ± 5.95	28.24 ± 4.59	226.8 ± 24.84
after	4.33 ± 0.53	26.16 ± 5.84	32.32 ± 5.48	209.6 ± 29.03
Control :				
before	5.51 ± 1.34	24.24 ± 2.98	28.48 ± 6.16	249.6 ± 22.56
after	4.14 ± 0.04	26.38 ± 0.81	32.76 ± 2.67	272.0 ± 34.50

Table 3

TSP, NPN, BU and TSC levels of weaned calves

Calves	gm % TSP	NPN	mg % BU	TSC
Experimental:				
before	5.14 ± 1.05	30.66 ± 7.12	41.26 ± 5.13	208.6 ± 19.35
after	5.31 ± 0.58	35.28 ± 7.56	50.36 ± 7.14	299.2 ± 21.92
Control :				
before	4.94 ± 0.19	27.88 ± 5.99	35.74 ± 1.98	158.8 ± 22.63
after	5.28 ± 0.39	27.52 ± 6.02	35.04 ± 2.71	192.4 ± 22.06

TSP = Total serum protein NPN = Non-protein introgen
 TSC = Total serum cholesterol BU = Blood urea

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Regarding the growth responses to selenium. Table 1 shows the live-weight gain of unweaned calves was 39.45%, while weaned calves gained 26.33%. These results are high if compared with the live-gain weight of unweaned and weaned calves without selenium administration which were 21.80% and 18.50%, respectively.

From the results obtained and recorded in Tables 2 and 3, it is revealed that there are no significant differences between total serum protein, non-protein nitrogen, blood urea and total serum cholesterol of unweaned and weaned calves received selenium and those left without selenium administration.

It is concluded that selenium administration to either unweaned and weaned calves, in the above-mentioned doses, have no deleterious effect on blood serum components estimated.

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