

# تأثير السبروهبتادين على النمو وكفاءة التحويل الغذائي وتركيب الذبيحة في الأغنام

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## الملخص العربى

أجرى البحث على ثمانية عشر من ذكور الأغنام لدراسة مدى تأثير السبروهبتادين ، عند اضافته للعليقة ، على وزن الجسم الحى - كفاءة التحويل الغذائى ونوعية الذبيحة وقد أدت اضافة هذا الدواء الى علائق الأغنام الى سرعة النمو وزيادة كفاءة التمثيل الغذائى ونسبة التصافى كما أدت الى تحسن نوعية اللحوم للذبائح .



**EFFECT OF CYPROHEPTADINE\* ON GROWTH, FOOD  
UTILIZATION EFFICIENCY AND CARCASS  
COMPOSITION IN SHEEP**

BY

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SUMMARY

Eighteen Osimi rams were used in this experiment to study the effect of Cyproheptadine, when mixed with the ration, on body weight, food efficiency and carcass quality.

Cyp increased the growth, food utilization efficiency and carcass yield in addition to the improvement of meat quality.

INTRODUCTION

The appetite and growth stimulating properties of cyproheptadine were first reported by LAVONSTEIN ET AL (1962). They found no evidence for water retention, hyperadrenocorticism or hyperthyroidism and noted the normal appearance of all subjects with the exception of exogenous obesity. BERGEN (1964) also studied the appetite stimulating properties of cyproheptadine in asthmatic childrens and revealed none of the characteristics of endocrine abnormalities. He added also that it is interesting that this property of Cyp is apparantly manifested only in children, since adults given this drug have failed to gain weight. BERGEN also reported in his attempt the possibility that Cyp might have the biochemical potentiality to increase traffic through the hexose monophosphate shunt and thus stimulate lipogenesis. Such activity would be diminished when administration of the drug was terminated and in active children added fat stores might be utilized fairly rapidly.

The drug has an adequate margin of safety as indicated by the acute and chronic studies in various laboratory animals.

The present investigation is undertaken to study the effect of cyproheptadine on growth, food efficiency, and carcass quality in sheep.

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(\*) Cyproheptadine is a potent antihistaminic and antiserotonin agent used in human medicine. Periactin is the registered trademark for its brand of cyproheptadine.

## EXPERIMENTAL

Eighteen 6-8 Ms. male Osimi sheep, of approximately equal weights were experimental on. They were randomly divided into three groups of 6 rams each. The rams of the three groups received coarsely ground readily manufactured dry mixture in addition to pea straw as a roughage. The ration was chemically analysed and the concentrate mixture was found to contain 7.60% moisture, 17.54% crude protein, 4.86% ether extract, 13.67% fibre and 8.51% ash, while the straw contained 8.33% moisture, 2.49% crude protein, 2.91% ether extract, 35.67% fibre and 15.31% ash.

To the concentrate mixture offered to the second and third groups cyproheptadine was added at the rate of 2 & 4 mg per 3 kg concentrate mixture respectively.

The experiment lasted for 16 weeks. During this work, the three groups were offered a relatively equal amounts of concentrates and straw. Clean water was available throughout the whole period.

Rams were weighed at weekly intervals. Any clinical sign of drug toxicity was recorded.

At the end of the experimental period, two rams from each group were randomly chosen, fasted for 12 hours, then slaughtered for the determination of the carcass dressing values and for meat analysis. Samples of lean meat were taken from loins, shoulders and thighs and the samples were examined chemically for determination of moisture, fat and ash content. Protein content was estimated by difference. The analysis was undertaken according to A.O.A.C. methods (1960).

All data were statistically analysed according to Snedecor (1956).

## RESULTS

It was noted that rams of the three groups showed normal growth, with no signs of drug toxicity were observed but slight sedative effect on rams of the second and third group was noted.

### *Effect of Cyp on growth and food utilization efficiency:*

Table 1 shows the relative equal amounts of concentrates and straw consumed weekly by each ram in the three groups.

In Fig.1, the rams of the third group had the highest growth rate while the rams of the first and second group showed nearly the same growth rate. Statistically the difference in growth between the first and third group was significant (at 5% level) as the t value was 2.460.

The promoting effect of Cyp on growth began to be clear even after the first week from drug administration.

TABLE 1. Amounts of concentrate mixture and straw consumed by each ram in the three groups

Weeks	Conc. mixture Kg	Straw Kg.	Weeks	Conc. mixture Kg	Straw Kg.
1	3.25	1.08	9	6.58	3.33
2	3.50	1.22	10	8.00	4.15
3	4.08	1.51	11	8.50	4.79
4	4.67	1.30	12	8.75	5.42
5	4.67	1.47	13	9.17	5.50
6	4.67	1.64	14	9.33	5.66
7	5.17	2.09	15	9.91	5.25
8	5.75	2.68	16	9.92	5.32

*Effect of Cyp on the carcass yields:*

Table 3 shows that Cyp. administration increased the amount of fat stored in the fat stores as it is cleared from the increased amount of tail fat and internal fat in the third group and increased tail fat in the second one. Also the drug increased the yield of the carcasses in the second and third groups.

*Effect of Cyp on meat:*

Cyp administration tend to increase moisture and decrease the fat content of loins; and to increase moisture and protein and decrease fat content in the meat found in both fore and hind quarters. On the average Cyp at the concentration of 2 mg/3 kg ration increased the protein content of meat and decreased the fat, while at the concentration of 4 mg/3 kg ration increased moisture protein contents and decreased fat percentage in meat.

## DISCUSSION

In this investigation Cyp, when administered at the rates of 4 mg/3 kg concentrate mixture, increased the food utilization efficiency and weight gain, in spite of sheep given the same amount of food as the control group. This finding counteract what was mentioned by BERGEN (1964) that the Cyp effect on body weight is due to the inducing of hyperphagia and thus weight gain. So one is

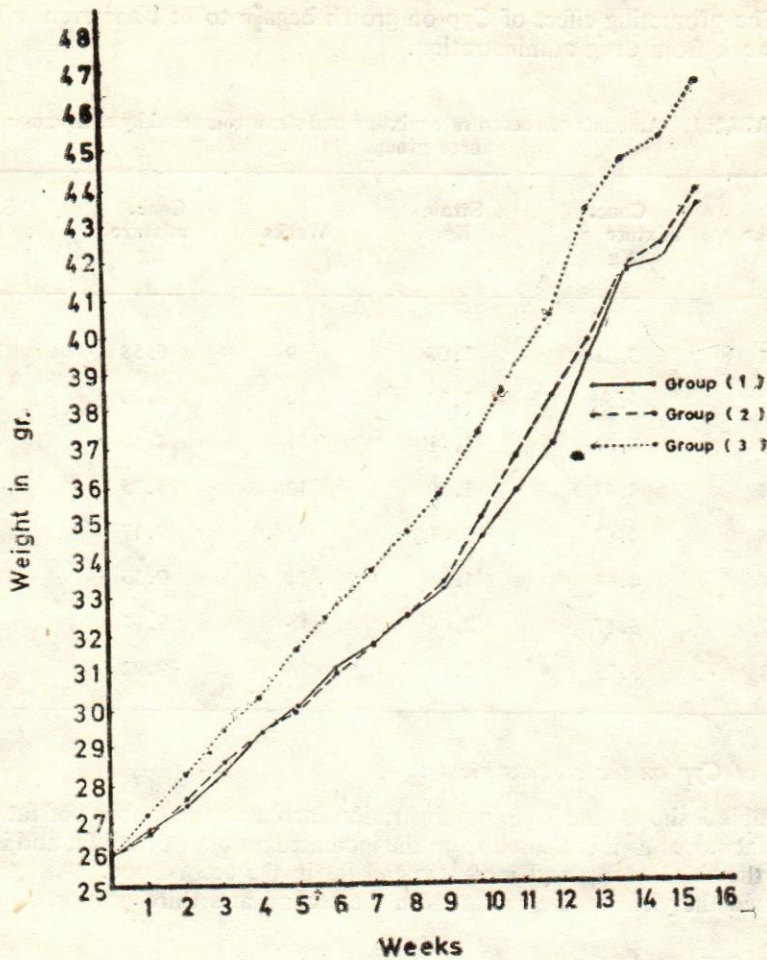


Fig. 1 Body weight development in the three groups of rams.

tempted to reflect on the possibility that the drug might have to work on the metabolic pathways in the body, or by its slight sedative effect, it may decrease the amount of energy lost in body movements and thus more food energy will be available for body building.

The drug administration increased the yields of carcasses by 2.4 to 3.07% and this increase was chiefly due to the largest amount of fat stored in the tail as its amount reached 5.86% in the groups given Cyp while, it reached 4.09% in the group used as a control. This confirms what was mentioned by BERGEN that Cyp might stimulate lipogenesis.

TABLE 2 Body weight development of Rams in the three groups :

Weeks	Group 1 (no drug) Kg.	Group 2 (2 mg Cyp/3 kg) Conc. Kg	Group 3 (4 mg Cyp/3 Kg) Conc. Kg.
0	26.00	26.00	26.00
1	26.67	26.58	27.08
2	27.33	27.42	28.08
3	28.17	28.42	29.33
4	29.25	29.25	30.17
5	30.92	30.75	32.50
7	31.50	31.50	33.42
8	32.33	32.25	34.42
9	33.00	33.17	35.50
10	34.42	34.83	37.08
11	35.58	36.50	38.75
12	36.83	38.08	40.25
13	39.17	39.50	43.00
14	41.42	41.50	44.33
15	41.67	42.08	44.83
16	43.17	43.58	46.33

Cyp increased juiciness of meat due to increase in its moisture content. It decreased fat content between muscle fibers as most of fat was stored in the fat stores, while protein content was increased. In this respect Cyp administration is more beneficial to improve meat quality as mutton compared with beef, veal, camel or rabbit meat has lesser moisture and protein content, and comparatively more percentage of fat, LOTFI AND YOUSSEF (1968).

It may be concluded from this investigation that, Cyp is of beneficial effect of mixed in sheep rations at the rate of 4 mg/3 kg concentrate mixture as it improved the growth and food utilization efficiency, carcass yield and meat quality.

TABLE 3.—The carcass yield and dressing values in relation to the living weight of Osimi sheep.

(expressed in Kg/100 Kg. live weight)

Specification of the dressed carcass	Group 1		Group 2		Group 3	
	weight Kg	percent	weight Kg	percent	weight Kg	percent
Blood*	2.000	4.52	1.400	2.93	2.000	4.26
Skin*	5.000	11.30	4.500	9.42	5.405	11.50
Head	3.245	7.33	3.162	6.62	3.065	6.52
Feet*	0.965	2.18	1.040	2.18	0.995	2.12
Stomach & intestines	4.000	9.04	5.750	12.04	4.125	8.78
Ingesta*	3.250	18.64	8.750	18.32	8.750	18.62
Liver	0.570	1.29	0.760	1.59	0.703	1.50
Lungs + trachea	0.502	1.13	0.594	1.24	0.536	1.14
Heart	0.158	0.36	0.175	0.37	0.157	0.33
Spleen	0.057	0.13	0.043	0.09	0.042	0.09
Kidneys	0.124	0.28	0.143	0.30	0.122	0.26
Fat (in tail)	1.812	4.09	2.798	5.86	2.756	5.86
Fat (internal)	0.100	0.23	0.110	0.23	0.129	0.27
Yield (1)	17.250	38.98	18.500	38.74	18.000	38.30
Yield (2)	20.071	45.36	23.123	48.43	22.445	47.76
Weight of the whole animals	44.250	—	47.75	—	47.000	—

\* Inedible portions.

(1) Internal fat, i.e. Omental and mesenteric fat,

(2) Yield (1) weight of meat, fat and bones, i.e, dressed weight.

(3) Yield (2) Dressed weight plus the edible portions, i.e, tail fat, internal fat kidneys, liver, spleen and heart.



TABLE 4.—Mean values of the major chemical composition of fresh lean meat in the three groups.

Group	Cut of meat	Moisture %	protein %	Fat %	Ash %
Group 1	loin . . . . .	70.32	18.33	10.48	0.87
	Shoulder . . .	74.23	17.20	7.68	0.89
	Thigh . . . . .	74.80	17.74	6.50	0.96
	Mean of all cuts	73.12	17.76	8.22	0.91
Group 2	Loin . . . . .	71.75	18.43	8.70	1.12
	Shoulder . . .	74.85	18.74	5.58	0.83
	Thigh . . . . .	72.35	21.20	5.28	1.17
	Mean of all cuts	72.98	19.46	6.52	1.04
Group 3	Loin . . . . .	73.58	17.91	7.55	0.96
	Shoulder . . .	75.54	18.19	5.19	1.08
	Thigh. . . . .	75.52	19.26	4.25	0.97
	Mean of all cuts	74.88	18.45	5.66	1.00

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TABLE I. - Mean values of the major elements of the blood of patients with various diseases.

Group	Chloramphenicol	Mean	Standard deviation
Group I	...	...	...
Group II	...	...	...
Group III	...	...	...
Group IV	...	...	...
Group V	...	...	...
Group VI	...	...	...
Group VII	...	...	...
Group VIII	...	...	...
Group IX	...	...	...
Group X	...	...	...
Group XI	...	...	...
Group XII	...	...	...
Group XIII	...	...	...
Group XIV	...	...	...
Group XV	...	...	...
Group XVI	...	...	...
Group XVII	...	...	...
Group XVIII	...	...	...
Group XIX	...	...	...
Group XX	...	...	...
Group XXI	...	...	...
Group XXII	...	...	...
Group XXIII	...	...	...
Group XXIV	...	...	...
Group XXV	...	...	...
Group XXVI	...	...	...
Group XXVII	...	...	...
Group XXVIII	...	...	...
Group XXIX	...	...	...
Group XXX	...	...	...
Group XXXI	...	...	...
Group XXXII	...	...	...
Group XXXIII	...	...	...
Group XXXIV	...	...	...
Group XXXV	...	...	...
Group XXXVI	...	...	...
Group XXXVII	...	...	...
Group XXXVIII	...	...	...
Group XXXIX	...	...	...
Group XL	...	...	...
Group XLI	...	...	...
Group XLII	...	...	...
Group XLIII	...	...	...
Group XLIV	...	...	...
Group XLV	...	...	...
Group XLVI	...	...	...
Group XLVII	...	...	...
Group XLVIII	...	...	...
Group XLIX	...	...	...
Group L	...	...	...

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