

تأثير السبروهبتادين على النمو في الدواجن

دكتور / حسن محمود عبد الحفيظ - دكتوراه \ نبيلة عبد الهادي جازيه

الملخص

أجرى هذا البحث لدراسة صلاحية استخدام السبروهبتادين لزيادة الشهية، في الدواجن . وقد استخدم في البحث كتاكيت دقي ٤ . وقد لوحظ زيادة كمية الأكل المستهلكة وبالتالي سرعة النمو وزيادة طفيفه ظهرت بعد حوالي ٩ أسابيع من تعاطى الدواء وقد لوحظ أيضا أنه لا يؤثر على كفاءة التمثيل الغذائي وبسبب اختلافات بسيطة في نسبة التصافى أو التحليل الكيميائي للحم . ومن ذلك تبين أنه لا يوجد أى فائدة اقتصادية من إضافة الدواء لملائق الدواجن .

Dept. of Hygiene and Preventiv Medicine

Head of The Dept: Prof Dr. S. Nasr

GROWTH STIMULATION PROPERTIES OF CYPROHEPTADINE IN FOWL

(With 5 Tables)

by

H. M. Abdel-Hafeez and Nablla Gazia.

(Received at / 1975

SUMMARY

This investigation was performed to study the effect of cyproheptadine hydrochloride (cyp), which is used in human medicine, as an appetizer on fowls. The experiment was carried out on Dkki 4 chicks. It was noted that food intake and body weight were slightly increased. The growth promoting effect of the drug appeared after 9 weeks from its administration. Cyp administration did not improve the food utilization efficiency but caused slight changes in the dressed carcass and chemical analysis of meat. It was concluded that Cyp is of no beneficial effect to be added to poultry mashes.

INTRODUCTION

It has been reported clinically that cyproheptadine increases appetite and food intake in asthmatic and anorexic children. They become more obese and taller than other normal children not given this drug. BERGEN (1964), DRASH, ELLIOTT, LANGS; LAVENSTLIN AND COOK (1966), IDEL-, SHON (1967), KOPMAN, KATZ, MASANT, MORA AND NUCHNIK, (1968), LAVENSTEIN DACANEY LASAGNA AND VAN NETRS (1962), NARANJO (1962), POTOTSCHING AND SERAFINI (1968), AND PUENTES ET AL (1968).

* Cyproheptadine, 1-methyl-4-(5H-dibenzo (a,d)-cyclohepten ylidene) piperidine, is a potent antihistaminic and antiserotonin agent recommended for the treatment of allergic disorders and pruritic dermatoses in man. Periactin is the registered trademark of Merck, Sharp & Dohme, for its brand of cyproheptadine.

Although the exact mechanism of this phenomenon is not known, however, Bergen et al (1964) Stated that it seemed possible that this agent might have a hypoglycemic action that in turn induces hyperphagia, while he found no demonstrable evidence of a hypoglycemic action of this agent. Some possible involvement of hypothalamic areas have been suggested by POTOTSCHING ET AL (1968). Comura et al (1973) concluded that Cyp modulates both lateral area (LH) and ventromedial nucleus (VMH) in the rat hypothalamus which might account for its effect on feeding in children.

This property of Cyp is apparently manifested only in children, since adults given this drug have failed to gain weight, BERGEN ET AL (1964). Similarly preclinical data, from the research laboratories of Merck Sharp & Dohme, in mature dogs and both mature and weaning rats and guinea pigs failed to reveal weight gain or increase in rate of growth.

The drug has an adequate margin of safety as indicated the acute and chronic studies in various laboratory animals. In doses far greater than those in the therapeutic range, ataxia, sedation and tachycardia can be produced, but other objective signs of toxicity are not evident.

The suggested dosage in man is 2 to 4 mg, three or four times a day depending on the age and response of the patient.

The present study was planned to evaluate promoting effect of cyproheptadine at different levels on the growth rate of fowl.

METHODS

Three hundred one day old unsexed Dokki 4 chicks were used in this investigation. They were randomly divided into four experimental groups, of 75 chicks each, of which the first was considered as the control. The chicks received a dry mash composed of: 50.0% yellow corn, 11.0% wheat bran, 24.0% beans, 4.5% blood meal, 4.5% meat meal, 1.5% fish meal, 1.5% calcium carbonate, 1.5% bone meal, 0.4% AD-mixture (5000 i.u.vit. A. and 500 i.u.vit. D/gm), 0.4% Common salt, 0.4% mineral salt and 0.4% Yeast.

The first two weeks of the experiment were considered as a preparatory period to notice any signs of toxicity which may result from drug administration. The chicks of the second, third and fourth group given half the experimental dose, proposed for each group, at the age of 4 day and for one week. After that the dose was doubled and given for another three days.

Cyproheptadine was added to the ration at the rate of 1.2 and 3 mg/6 Kg mash, for the second, third and fourth group respectively. This was done by mixing one fourth, one half and three fourths of finely ground periactin tablet with the mash.

During this work, food and fresh clean water were available to the chicks throughout the whole day. The chicks of the four groups were equally cared for, and any clinical sign of significant importance was recorded.

The food consumed weekly was calculated. The chicks were weighed individually every week till the end of the experimental period which lasted 13 weeks.

At the end of the experimental period six chickens (3 females and 3 males) were randomly chosen from each group for the slaughter studies, and various tests of meat analysis were performed as described by A. O. A. C. (1960).

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

RESULTS

It was noted that normal growth was achieved in both females and males of the four groups during the preparatory and experimental periods. No signs of drug toxicity were noted but slight sedation in the chickens of the fourth group.

Effect of Cyp on growth :

In female chickens, statistical analysis of the results presented in table 1 showed that the second and third group, given 1 & 2 mg Cyp/6 Kg food respectively, have a relatively high growth rate. The coefficient of variation in the four groups was (15.3, 11.8, 9.95 and 12.18 respectively).

In males as illustrated in table, 2, only the third group showed slight increase in growth compared with the control, while the difference between the control and the other two groups was not significant. The coefficient of variation was 11.71, 11.63, 8.10 and 11.16 for the four groups respectively.

The growth promoting effect of Cyp on female and male chick be clear only at the last period of the experiment (7th or 6th weeks Fig. (1 & 2).

The amount of food needed for 1 Kg gain in the four groups was calculated and found to be nearly equal (4054, 4056, 3853, and 3868 g respectively).

Effect of Cyp on Carcass Yield :

Regarding the dressing value there was no clear difference between different groups.

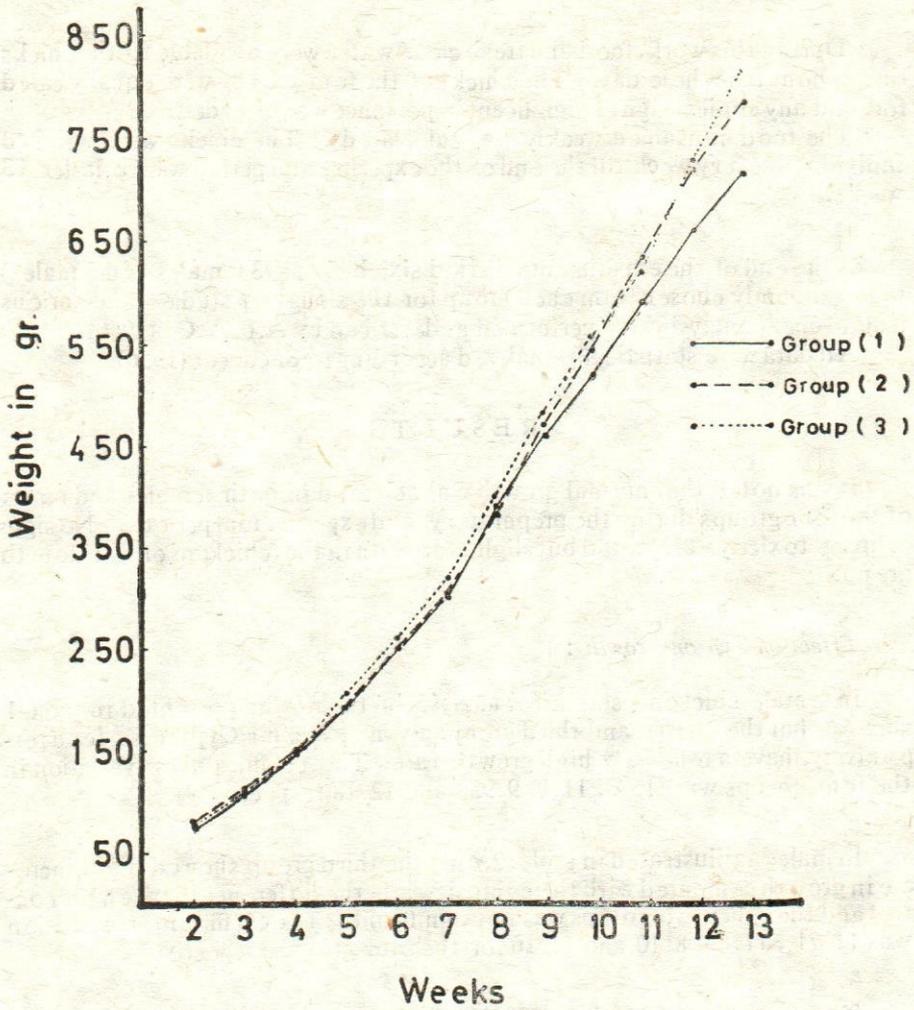


Fig. 1 Body weight development in female chickens.

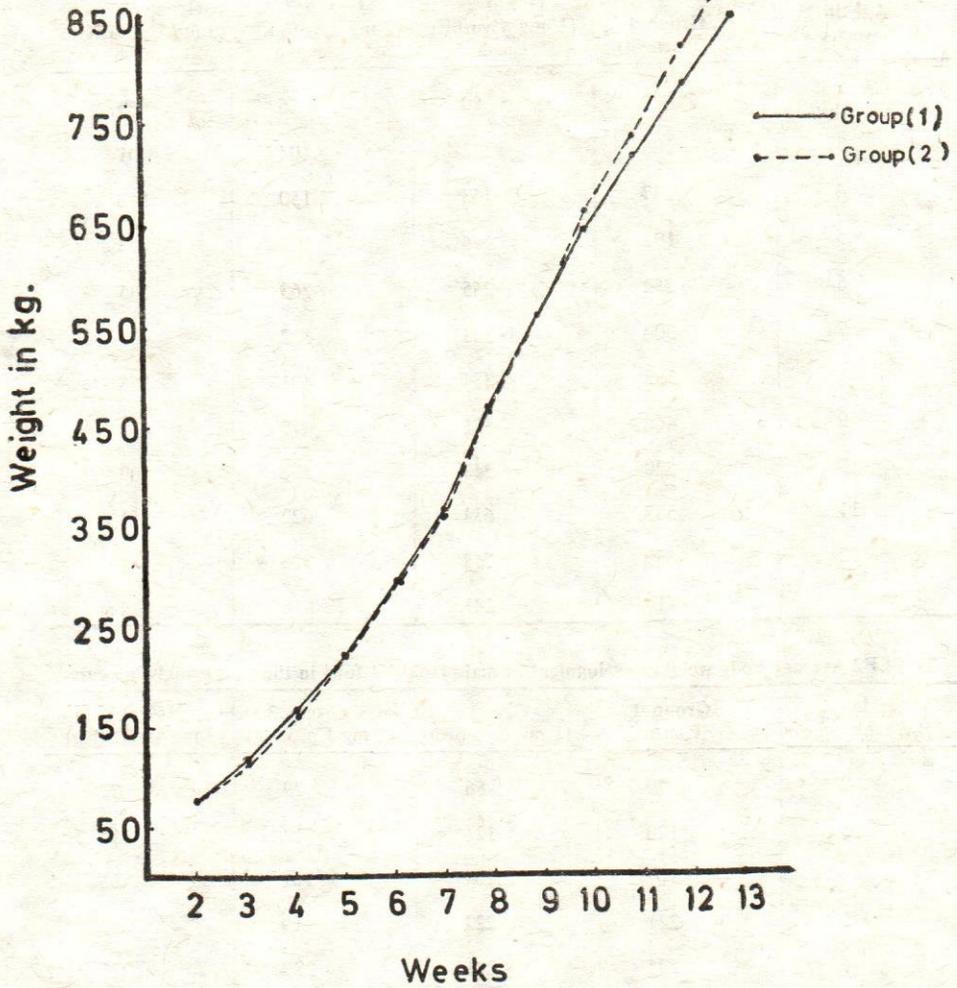


Fig. 2 Body weight development in male chickens.

TABLE 1. Average body weight development of female Dokki 4 fowl in the four groups (in grams):

Age in weeks	Group 1 (Coturool)	Group 2 (1 mg Cyp/6Kg) mash	Group 3 (2 mg Cyp/6 kg) mash	Group 4 (3 mg Cyp/6 Kg) mash
2	72	80	76	69
3	106	111	104	101
4	147	148	150	142
5	194	196	207	194
6	252	255	263	235
7	304	303	322	292
8	392	384	401	358
9	460	471	479	433
10	520	548	556	509
11	587	634	622	551
12	659	718	725	661
3	714	781	816	734

TABLE 2. Average body weight development of male Dokki 4 fowl in the four groups (in grams)

Age in Weeks	Group 1 Control	Group 2 (1 mg Cyp/6Kg)	Group 3 (2 mg Cp/6 Kg)	Group 4 (3 mg Cyp/6 Kg)
2	79	86	79	77
3	120	124	113	116
4	167	164	161	165
5	221	222	219	223
6	295	281	289	273
7	367	342	362	346
8	469	437	468	424
9	560	432	560	490
10	641	628	651	602
11	713	712	732	635
12	785	793	820	725
13	851	854	899	801

TABLE 3. The average amount of food consumed weekly in the four groups

Weeks	Group 1	Group 2	Group 3	Group 4
2 — 3	158	171	166	155
3 — 4	151	164	165	170
4 — 5	144	156	159	164
5 — 6	209	181	193	206
6 — 7	259	202	220	247
7 — 8	249	245	253	230
8 — 9	271	303	318	247
9 — 10	286	352	378	293
10 — 11	302	365	394	309
11 — 12	265	387	404	320
12 — 13	400	407	415	328

TABLE 4. The carcass yield percentage in female chickens in relation to the living weight

	Female chickens							
	Group 1		Group 2		Group 3		Group 4	
	gm	%	gm	%	gm	%	gm	%
Live weight	934.00	—	988.33	—	966.67	—	965.00	—
Giblets	52.33	5.60	56.33	5.71	48.00	4.97	54.00	5.60
Legs & end of the wings	53.00	5.67	50.33	5.09	54.00	5.59	53.33	5.53
Head & neck	71.67	7.67	64.00	6.48	63.00	6.52	66.67	6.91
Dressed carcass	580.67	2.17	605.67	61.28	577.33	61.79	510.00	60.10

TABLE 5. The carcass yield percentage in male chickens in relation to the living weight:

	Male chickens							
	Group 1		Group 2		Group 3		Group 4	
	gm	%	gm	%	gm	%	gm	%
live weight	1035.00	—	1045.00	—	1010.67	—	941.67	—
Giblets . . .	47.67	4.60	49.66	4.75	44.00	4.31	43.33	4.60
Legs and end the wings	71.67	6.92	69.00	6.60	73.00	7.16	59.33	6.30
Head and neck	91.67	8.86	78.33	7.50	78.00	7.65	80.00	8.50
Dressed carcass . . .	611.67	59.10	632.33	60.51	634.67	62.24	555.00	58.94

TABLE 6. Chemical analysis of meat

Analysis	Group 1 %	Group 2 %	Group 3 %	Group 4 %
Moisture . . .	71.38	75.28	75.75	72.48
Protein	22.75	23.20	24.22	23.82
Fat	5.50	1.20	1.50	4.30
Ash	0.30	0.38	0.41	0.32

Effect of Cyp on Chemical analysis of edible meat :

Samples of meat from thighs and breast were taken and chemically analyzed for its moisture, protein, fat and ash content. It was found that in the groups given the drug the moisture content increased and the fat decreased while there was no significant differences in regard to the ash and protein content.

DISCUSSION

It is clear from the results of this experiment that Cyp showed slight promotion for growth which may be due to its slight sedative effect. It does not promote significantly food intake or food conversion and in this aspect chicks differ from rats which took more food and gained more weight after only a short period of Cyp administration (OOMURA, 1973) and sheep which showed best growth and higher food conversion after Cyp intake (unpublished data of ABDEL-HAFEEZ 1974).

This fact may be interpreted that Cyp evokes growth and increased the food utilization efficiency only in mammals and its addition to poultry mash is of no economical importance.

REFERENCES

- A.O.A.C. . Association of Agriculture Chemists. Official Method of Analysis, 9th Ed., Washington, D.C., 1960.
- Bergen, S.S., (1964) Appetite stimulating properties of cyproheptadine. *Am.J. Dis., Child.* 108 : 270-273.
- Darsh, A. Elliott, J., Langs, H., Lavenstein, A.F., and Cooke, R.E., (1966). The effect of cyproheptadine on carbohydrate metabolism *Clin. Pharmac. Ther.* 7, : 340-346.
- Idelshon, F., (1967). Experience with cyproheptadine hydrochloride as a nonhormonal anabolic. Its effect on the body weight of pediatric patients. *Orient. Med.* 785 : 824-825
- Kofman, I. Katz, R., Masanti, J.C., Mora, A., and Muchnik, J., (1968). Cyproheptadine hydrochloride : 1st part-effect on weight and height increase in children. *Orient. Med.* 202 : 272-276.
- Lavenstein, A.F., Dacaney, E.P., Lasagna L. and Van Metre T.E., (1962). Effects of cyproheptadine on asthmatic children. *J. Am. Med. Ass.* 180 : 912-916.
- Naranjo, P., (1962). Antiserotonin-antihistamine agents in allergic diseases-clinical evaluation of cyproheptadine. *Allergie Asthma* 8. : 248-254.
- Pototsching, C. and Serafini L., (1962): Clinical observation on the antianorectic activity of cyproheptadine. *Minerva paediat.* 82 : 1008-1012.
- Puentes, J., Ojeda O.A., and Do Moreno, H.M.T., (1968). Our experience with Orient. *Mde.* 815, 671-675.
- Snedecor, G.W., (1956). Statistical Methods, 4th Ed. The Iowa State College Press, Amer. Iowa.
- Oomura, Y.T., Ono M. Sugimori, T. Nakamura (1973): Effects of cyproheptadine on the feeding and satiety centers in the rat. *Pharmac. Biochem. Behav.* 1 (4) 449-459.
- Our great thanks for Prof. Dr. M.A. Ashoub and Prof. Dr. S. Nasr.

CONFERENCE

... ..

DISCUSSION

... ..

... ..

REFERENCES

... ..

... ..

... ..

... ..

... ..

... ..