

SOME OBSERVATIONS ON THE FEEDING OF THE GUINEA-PIG

Akbarzadeh, J, and Arbabi, E.

Summary

Guinea-pig bred successfully on Razi Pellet for Guinea-pig (R.P.G). The diet was supplemented with hay, without additive vitamin C. No differences in reproductivity and growth rate have been seen between these animals and those receiving diet of unlimited supplies of green food as a source of vitamin C and also with the animals, which were fed by vitamin C and hay supplemented diet. From the result of this experiment it is evident that hay has unknown factors, which has an effect on reproduction and growth rate of guinea-pig. But in the shape of grass meal lose its unknown factor(s) with processing of the pellet.

It was found that the colour guinea-pig needed more vitamin C than albino, and elimination of supplemented vitamin C with R.P.G. diet is possible.

Introduction

Guinea – pig, because of absence gulonolactone oxidase anzyme in its liver microsomes, can not synthesize vitamin C endogenously (Odumosu and Wilson 1973). therefore the guinea-pigs'diet should be supplemented with vitamin C or green foods. The ascorbic acid requirement of guineapig have been well recorded by several investigators (Crampton and Bell 1974; Yew 1972; Collins and Elvehjem 1958; Pfander and Mitchel 1952.). It was shown that a daily intake of 5 to 10 mg ascorbic acid is needed for the requirements of the guinea-pig. In the present experiment the main purpose was to elimination of additive vitamin C or hay from diet without any major effect on their breeding.

Materials and Methods

Animals:

The animals were all female and were put on experiment at weaning age at a weight of about 200g. They were pibright stock. Feeding:

The animals were divided into seven groups A,B,C,D,E,F and G, and fed with R.P.G. diet with or without hay, green foods and vitamin C as shown in Tab.1. The R.P.G. diet has following composition:

Dried grass meal	30 %
Ground wheat	20 %
Ground oats	16 %
Linseed meal	10 %
Soya cake	10 %
Dried milk powder	5 %
Fish meal	2.5 %
Meat and bon meal	2.5 %
Sodium chloride	1 %
Mineral supplemented	1 % (1)
Vitamin supplemented	2 % (2)

Procedure of experiment:

Diet were fed in pots and were spilt to such an extant, that it was necessary to fill the pots twice a day. We tried to measure the food cosumption, but it proved imposible to obtain a reliable estimation of food eaten. Animals housed per group in floor pen and weight weekly for growth rate. After twelve weeks, with adding a male to each group, they had oppurtuiny to be fertile. Sexual maturity occured at normal time an average reproduction of each group was recorded.

Routin check was made daily.

Result and Discussion

The average additional weight of guinea-pig per group are shown in Tab.

2. The result of direct comparison of the growth rate of animals on different

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- (1): Mineral Mix contain: Calcium 1.2%; Phosphore 0.6%; Potassium 1.6%; Magnasium 0.35%; Manganese 50 mg/Kg; Iron 50 mg/Kg; Cooper 5 mg/Kg; Cobalt 0.5 mg/kg; Iodine 0.2mg/kg.
- (2): Vitamin supplemented contain : Vitamin A 15000 IU/Kg; Vitamin D₃ 5000 IU/Kg; Thiamine 16mg/Kg; Panthothenic acid 20mg/Kg; Niacin 100mg/Kg; Pyrodoxin 20mg/Kg; Vitamin E 80mg/Kg; Vitamin B₂ 16mg/Kg; Vitamin K₃ 10mg/Kg; Para-Amino-Banzoic acid 10Cmg/Kg.

Table1: Composition of diets given to 7 separate groups of guinea-pig.

Groups	Diets			
	R.P.G	Vit.C	Hay	Green food
A	+	+	-	-
B	+	+	+	-
C	+	-	+	-
D	+	+	-	-
E*	+	-	-	-
F	+	-	-	-
G	+	-	-	+

* This group was the only colour guinea-

Table 2: Average additional weight(g) of guinea-pigs fed by different diets.

Weeks	Groups						
	A	B	C	D	E	F	G
1	48	55.75	53	39.75	21.25	29.50	83.75
2	201.50	122.50	106.50	91	53.25	67.75	135.25
3	136.50	172.50	158.25	143.50	75	113	171.75
4	173.25	229.75	205	179	105	157.75	240
5	208.25	265	259.25	195.50	131.75	195.50	269.75
6	248.75	312.75	291	259	148.50	222.50	319.75
7	296.95	350.25	330	309.75	175.50	241.25	374.50
8	374.15	399	384.50	347	206.75	270.25	403.50
9	380.65	441.25	427	364.25	226	315	446.25
10	395.40	486.75	469.75	400	238.75	349.25	475
11	433.15	523.75	516.75	453.75	272.75	386.75	513
12	474.15	572	569.50	506.50	313.50	421.75	573.75

diet are shown in Fig. 1. It is evident from this comparison that, G,A and C groups have maximum and E group (colour guinea-pig) minimum growth rate. In this figure the E and F curves shown the differences growth rate between E and F group respectively, which is highly significant. The diet formula for both group was the same (Tab. 1). both groups' diet did not have any supplement vitamin C and the grass meal in the diet was the only source of ascorbic acid (the analysis of pellet show 210 mg vitamin C per 100g). Besides of slower growth rate in E group another factor of interest in this group was hairlessness. This hairless condition was observed in some 30 per cent. Plucking by one another have seen on several occasion. Dr. Hedayati from bacteriology department isolated dermatophyt fungi from hairless guinea-pigs and belived that the causative agent of hairlessness was dermatophyt fungi, but we belived it had dietary aetiology. The affected guinea-pigs recoverd when fed by green food supplemented diet for several weeks. This two groups were examind for serum complement. The titer of complement in albino group (1/30) was higher than colour guinea-pigs (1/20). We have not seen any hairless condition in F group. In guinea-pig's deficiency of vitamin C will cause disturbances of reproduction. Reproductive failures depend on the severity of the vitamin C deficiency. For comparison of productivity the mating of these groups was carried out after twelve weeks. The F group gave birth to litter about two weekes earlier and the average litter size (2.5) was higher than E group (1.5) Birth wieght and growth rate in F group was better than E group. In E group the young guinea-pig born well haired, but were stripped after some days and plucking by the sow was seen. Dead newborn were partialy devoured and in some instance the extremities of the ears and toes were eaten befor death. The result, however indicated that the colour guinea-pigs need more vitamin C than albino. A group was fed with vitamin C supplemented R.P.G. diet without hay and C group was fed with R.P.G. diet and hay. Though, the amount of ascorbic acid (300mg/100g) in diet for A group was much more than for C group (210mg/100g), but the additional wieght of the latter was significantly highes than former (Tab. 2). It is obvious that differential wieght of C group is depended on supplemented hay. Though the exact function of hay has not been clearly defined (Paterson 1972), undoubtedly it prevents bordom and it will, of course, add roughage to the diet. We agreed with Paterson and susted that the rate of the growth is not depended on the bulking materials but it is depended on unknown factor (s) which would be find in hay (Wolley 1942; Wolley and Herbert 1945). That hay in the shape of the grass meal, with regarding to the amount of carbohydrates (62.8/100) in R.P.G. diet, which is sufficient for growth rate and reproductivity of guinea-pig, undoubtedly lose its unknown factor(s) with processing of the pellet. From the result in figure 2 it can be concluded that, with consider to the higher litter size in those animals which recieved supplemented hay (group B and C) , the litter size is more related

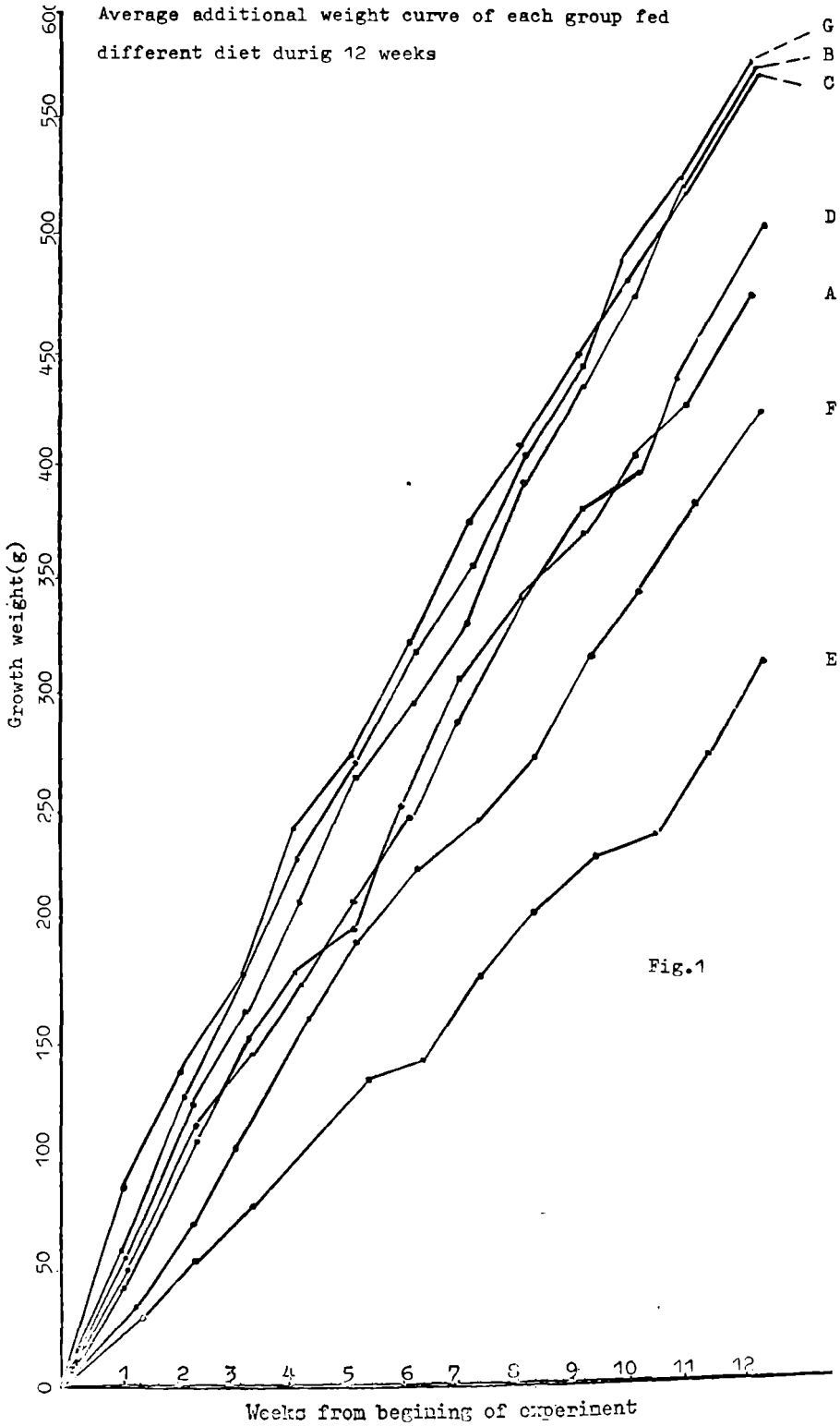


Figure2:Effect of different diets on litter size of different groups.

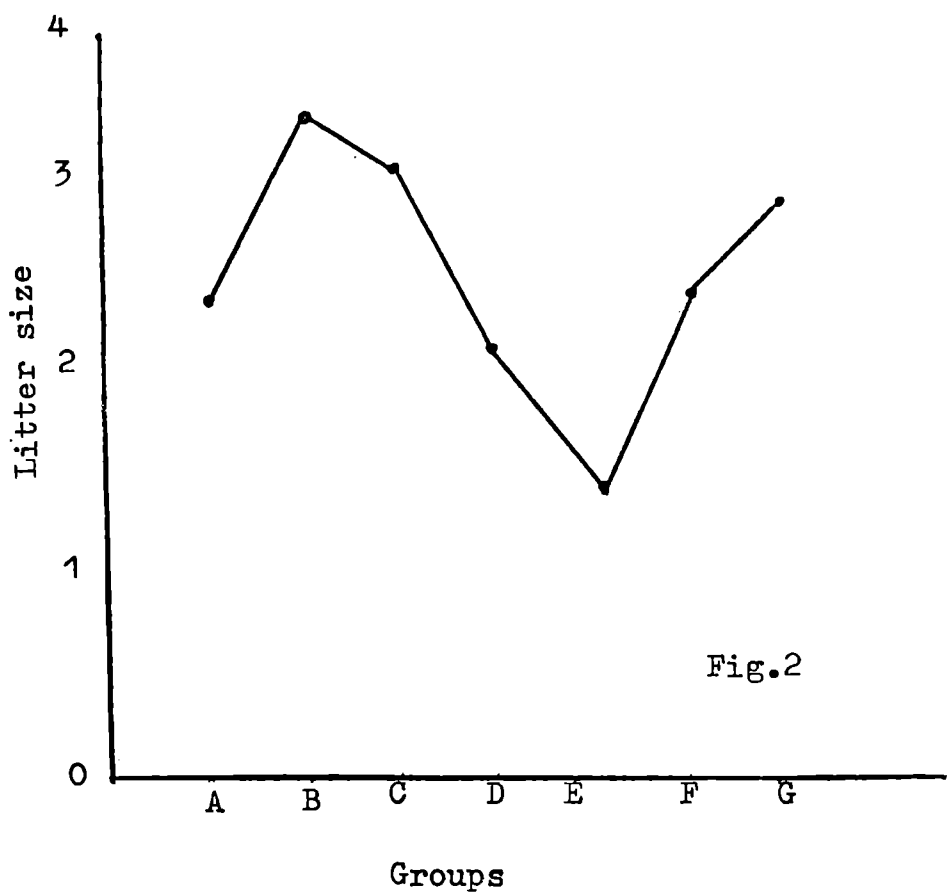


Fig.2

to hay than ascorbic acid. In figure 1 the three groups (B,C and G) gained weight steadily during the experiment. The G group, which had given the most promising result in the experiment was fed by R.P.G. diet and green foods. The result on feeding R.P.G. diet and hay without additive ascorbic acid to C group showed the growth rate (Tab.2) and litter size (Fig. 2) equal to the animals receiving supplemented green foods and to those which fed vitamin C and hay fortified diet. As far as we know, the litter size and growth rate of these three groups (B,C,G) were the same, so we can substitute the supplemented diet with vitamin C by R.P.G. diet.

We should like to thank Dr. Hedayati for his microbiological examination.

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