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EVALUATING DATE PITS AS A WASTE PRODUCT OF FOOD INDUSTRIES IN FEEDING NZW RABBITS

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Abstract

Sixty New Zealand White (NZW) rabbits weaned at 5 weeks of age were distributed among 5 treatments to evaluate date pits in feeding rabbits at levels 0, 5, 10, 15 and 20 respectively. Rabbits of each treatment were individually caged and body weight, body weight gain, feed consumption and feed conversion were recorded and calculated weekly up to 12 weeks of age. Digestibility trials were carried out to evaluate the digestibility coefficient of date pits and to determine the effect of the different levels of date pits on the digestion coefficients of the different nutrients of the five isonitrogenous-isocaloric diets. Four representative rabbits from each feeding treatment were chosen randomly at 12 weeks of age for studying the carcass characteristics.

Results obtained could be summarised as follows:

1. The digestion coefficient values of ground date pits (G.D.P.) were 60.73, 91.32, 0.00, 49.16, 76.20 and 62.37 % for DM, EE, CP, CF, NFE and OM respectively. The nutritive values of G.D.P. were found to be 58.96 % SV and 63.36 % TDN. NFE was highly digested with the most tested rations having a coefficient ranging between 78.28 up to 81.62 %, CP was the next one having a coefficient ranging between 60.55 up to 70.22 %, while CF digestion coefficient was affected by increasing G.D.P. levels (5-20 %) ranging between 32.99 % (0.00 % G.D.P) down to 15.77 % (20 % G.D.P).

2. Live weight of growing NZW rabbits for the tested rations decreased with increasing the dietary date pits levels from 5 to 20 % and the difference in feed consumption between unsupplemented G.D.P. and the supplemented ones was statistically significant ($P < 0.05$) in some cases. The average daily feed consumption for rabbit feed 20 % recorded 43.09 % lower than the control diet indicating that feed conversion values were much affected by incorporation of G.D.P. in rabbits diets.

3. Carcass % was not significantly affected by substitution 5-20 % corn in the tested rations by G.D.P.

4. From the economical point of view the substitution of corn with G.D.P. in rabbits' rations showed a marked decrease in the ration's cost but at the same time it showed a marked decrease in growth, feed conversion and economical performance of growing NZW rabbits.

In conclusion, to achieve the maximum return from the rabbit keeping in developing countries information is needed about waste or neglected resources which could be transferred into protein in the form of meat to save cereals and legumes for human consumption only.

Introduction

Fruit and vegetable wastes are produced after harvesting, and processing these waste residues, as sources of plant protein and energy, depends on economic needs. Date waste is an acceptable feedstuff due to its high nitrogen free extract. Its only disadvantage is its high fibre content. It may be used with low percentage for layers till 5 %, is very suitable for ruminants (El-Boushy 1990). Gualtiere and Rapaccini (1990) used 0 and (0 %) levels of ground date pits for feeding broilers. They showed that females fed control diet was significantly ($P<0.05$) lower in weight than those fed on 10 % ground date pits. Comparing males with females it was found that males fed on control were heavier than females fed on control and on 10 % ground date pits. Therefore the present study was carried out to investigate growth performance, digestibility, carcass traits and economical efficiency of growing New Zealand White rabbits as affected by different levels of date pits in the rabbits' diet.

Material and Methods

The present work was carried out in the farm and laboratories of the Animal Production Department, Faculty of Agriculture, Zagazig University, Egypt.

Fattening trials:

A control ration was formulated (Table 1) and four tested rations including date pits at levels 5, 10, 15 and 20 % were also formulated according to NRCX (1977) for evaluating the effect of dietary date pits on growing rabbits. Sixty New Zealand White rabbits (NZW) weaned at 5 weeks of age were used in this study and were distributed among 5 treatments. Rabbits of each group were individually caged. The five groups were assigned the following treatment:

Group 1: Fed on a feed mixture during the whole experimental period
Group 2: Fed on ration including 5 % (G.D.P.).
Group 3: Fed on ration including 10 % (G.D.P.)
Group 4: Fed on ration including 15 % (G.D.P.)
Group 5: Fed on ration including 20 % (G.D.P.)

Fresh water was available ad libitum for all groups. The average body weight, body weight gain, feed consumption and feed conversion were recorded and calculated weekly up to 12 week of age. At the end of the experiment four rabbits from each feeding treatment were chosen randomly at 12 weeks old for studying the carcass characteristics.

Digestibility trials:

Digestibility trials were carried out to evaluate the digestibility coefficient of date pits. Date pits were ground then thoroughly mixed with barley (INDIRECT DIGESTION TRIAL). Also digestibility trials were conducted to determine the effect of the different levels of date (5, 10, 15 and 20 %) on the digestion coefficients of the different nutrients and feeding values of the experimental diets for NZW rabbits.

Proximate analysis of diets and faeces were carried out according to methods of A.0.A.C. (1980). The data obtained were subjected to analysis of variance as outlined by Snedecor and Cochran (1982) with significant differences between treatments means determined by the multiple range test of Duncan (1955).

Results and Discussion

Digestibility trials

Average digestion coefficients for DM, OM, CP, EE, CF and NFE and nutritive values (SV and TDN) of date pits and concentrate tested rations used in growing trial are presented in Table 2.

Ground date pits (G.D.P.):

The digestion coefficients values of (G.D.P.) (Table 2) were 60.73, 91.32, 0.00, 49.16, 76.20 and 62.37 % for DM, EE, CP, CF, NFE and OM, respectively. The percentage nutritive values of G.D.P. were found to be 58.96 SV and 63.36 % TDN. The present determined value of TDN is lower than the calculated one (78 %) from Schneider et al (1951).

Tested G.D.P. rations:

NFE was highly digested with the most tested rations having a coefficient ranging between 78.28 up to 81.62 %. CP was the next having a coefficient ranging between 60.55 up to 70.22 %. CF digestion coefficient was affected by increasing G.D.P. levels (5-20 %) ranging between 32.99 % (0.00 % G.D.P.) down to 15.77 % (20 % G.D.P.). It is interesting to record that digestion coefficient values of 5 % date pits ration was more preferable than that of the control diet specially with CP and EE digestion. This may be due to the associative effect between the basal and the tested G.D.P.

The digestion coefficient of OM is a resultant of other coefficients of separate ingredients. It is commonly known that simple stomach animal feed should have an organic matter digestion coefficient not less than 70 %. Therefore, feeds of low digestion could be only partly added to other rabbit feeds of very high OM digestion. The nutritive values of the tested rations (SV and TDN) were decreased by increasing date pits levels in the tested rations (Table 2).

Growth performance:

Results presented in Table 3 showed than the final live body weight for the experimental treatments decreased significantly ($P< 0.5$) with increasing the dietary date pits levels from 5 to 20 %. Also using date pits at a ration of 15 and 20 % had a nearly similar effect on live weights. Sharof (1968) found that the use of date pits in feeding chickens and rabbits increased their weight, while Jumah et al. (1973) found that the final weight attained by broiler receiving no (G.D.P), however were higher than the feeding three levels (5, 10 and 15 %) of date pits.

Results in Table 3 show that incorporating G.D.P. at levels of 5, 10, 15 and 20 % in the rabbits diets has resulted in a decrease of 359.86, 456.46 , 732.26 and 744.66 g than the final gain eight of the control diet. This trend compared favourably with incorporating G.D.P. at the level of 15 % in the broiler diet which had resulted in a significant decrease in final weights which amounted to 178.3 g less than the control diet at 8 weeks period (Jumah et al., 1973).

The final consumption for rabbits receiving G.D.P. in their diets was lower than the feed consumed by rabbits having no date pits in their diet. These results disagree with that obtained

by Jumah et al (1973) who found that feed consumption for chicks receiving date pits in their diet was higher than the feed consumed by birds having no date pits in their diet.

Feed conversion for the experimental treatment increased with increasing the dietary date pits levels from 5 to 20 %. These results are in good agreement with those obtained by Jumah et al. (1973) on feeding broilers who reported that feed conversion figures increased with the increase of date pits level in the diet.

The cumulative values of mortality rate for different treatments during the experimental period are shown in Table 3. It is worthy noting that date pits incorporating in rabbit rations up to 15 % had no bad effect on the mortality rate.

The economic efficiency during the experimental period was the highest with the control ration (98 %) and the lowest with 20 % G.D.P. (119 %. It is clear that increasing the G.D.P. level in the experimental ration decreased the economic efficiency to 158, 152, 125 and 119 % in case in 5, 10, 125 and 20 % G.D.P. ration respectively.

Carcass characteristics of slaughtered rabbits:

Data in Table 4 demonstrate significant effects due to G.D.P. levels on the different parts and organ percentage of rabbits except the liver and heart fat. Carcass % was not significantly affected by substitution 5 and 20 % corn in the tested rations by G.D.P. Sharof (1968) reported that date seeds increased body weight and organs (heart. liver, spleen, kidney and ovary) in rabbit and chickens.

Kamel et al., 1981, indicated that various organs (liver, heart, spleen, pancreas and intestines) from chicks fed the various Zahdi date pits levels did not reveal any abnormalities. Organ weights varied among individual chicks that had been fed the same diet. Variation obtained among treatments could be attributed to both individual chicks that had been fed the same diet. Variation obtained among treatments could be attributed to both individual differences and to dates as an energy source because when date pits totally replaced corn in a practical ration, organ weights were not different from those of birds fed the control diet.

Generally, it could be concluded that to achieve the maximum return from rabbit keeping in developing countries, information is needed about the wastes or neglected resources which could be transferred into protein in the form of meat to save cereals and legumes for human consumption.

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