Some nutritional studies on rabbits

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This study was carried out in the Rabbits Rabbitry, Department of Animal Production, Faculty of Agriculture at Moshtohor, Zagazig University, Banha Branch, Egypt, during the period 2002-2003. This work aimed to evaluate nutritionally and chemically, the non conventional feed stuffs (sugar beet pulp and potato by-product meal) by their inclusion in the diet of growing rabbits instead of a part of the portion of berseem hay and concentrates to study the effect of incorporation of these feed stuffs on growth performance, carcass and reproduction traits in rabbits. One hundred and twelve NZW young rabbits (56 males and 56 females) at 6 weeks of age, their initial weight averaged 673.48 g, those rabbits were distributed at random into seven groups of 16 rabbits (8 males and 8 females).Treatments were arranged to be one as a control including 30% berseem hay, 20% yellow corn, 15% wheat bran, 15% barley, 15% soybean (44%), 3% molasses and 2% vitamins and minerals, (i.e. without any by-product) and 6 treatments representing 10, 25 and 40% levels of each of sugar beet pulp (SBP) and potato by-product meal (PBM). The experimental rations were formulated to be iso-nitrogenous, iso-caloric and contained about 17.10% crude protein, 2505.44 k cal/kg and 13.46% crude fiber. Rabbits were stocked at a rate of two per cage and fed ad-libitum. Feed consumption was recorded daily according to the actual feed intake. Live body weight of rabbits was measured and recorded weekly. The experimental growth period extended to ten weeks after start at 6 weeks of age. At theSummary& Conclusions 95end of the experiment a digestibility trial was conducted todetermine digestible coefficients of the experimental ration nutrients.Slaughter test was performed for random samples taken from the experimental groups of rabbits for evaluating carcassquality, chemical composition of their meat, blood components and cecum activity.Twenty eight females and 14 males of rabbits at 20 weeks of age were chosen at random from the experimental ones at the end of the growth period (four females and two males fromanimals of each of the seven treatments) were used for the reproductive study.Results obtained could be summarized as follow:The chemical analysis of dried sugar beet pulp was 91.24% DM, 93.73% OM, 9.73% CP, 1.25% EE, 21.05% CF, 63.70% NFE, 4.27% ash and 2261 DE K cal/kg while that of potato by-product meal was 92.15% DM, 94.88% OM, 11.60%CP, 5.88% EE, 17.0% CF, 60.40% NFE, 5.12% ash and 2392 DE K cal/kg. Growth performance of growing rabbits: Body weight:1. Results of this study showed that the weight of rabbits received the diet of T3 (diet including 25% sugar beet pulp, SBP), recorded higher body weight at most ages than the corresponding body weight of rabbits of the other treatments, followed by rabbits fed on the diet containing 25% potato by-product meal (PBM) (i.e. of T6). Rabbits received the diet ofSuntmary& Conclusions 96T4 (i.e. including 40% SBP) and the diet of T7 (including 40% PBM), showed the lowest body weights.2. Average body weight of rabbits fed diet of T6 were 2579.34 g, followed in a descending order by those fed the diets of T3 (2554.03 g), T1 (2542.19 g), T4 (2527.25 g), T2 (2461.73 g),T5 (2456.43 g) and T7 (2396.48 g).3.The differences in body weight between rabbits of different treatments were not significant at most ages studied except at 11 and 14 weeks of age which proved significance ($P<0.05$).4.The present study showed that average body weight for males was almost heavier than that of female rabbits. The differences due to sex effect on body weight were non-significant at all ages. Daily gain:1.The obtained results indicated that treatment had no significant effect on daily gain in weight of rabbits during the periods of 6-9, 12-16 and 6-16 weeks of age.2.Results showed significant ($P<0.05$) effect of treatment on daily gain in weight during the second period (9-12 weeks only).3.Results showed that T4 (including 40% SBP) had the best average daily gain during the

intervals of 9-12, 12-16 and 6-16 weeks of age.4.The increase in daily gain of rabbits fed T4 may be due to that T4 was more efficient than the other treatments.5.The effect of sex on daily gain in body weight was significant (P<0.05) during the period of 12-16 weeks of ageonly. Results showed that females recorded more daily gain in weight than males during the periods of 12-16 and 6-16 weeks of age with significant (P<0.05) differences while males showed more daily gain than females during the period of 6-9 and 9-12 weeks but without significant differences. Feed intake:1.The present results showed that effects due to treatments were highly significant (P<0.01) on feed intake of experimental rabbits during all intervals of the study. Rabbits fed on T4 (including 40% sugar beet pulp) and on T6 (including 25% potato by-product meal) consumed the highest experimental diets than rabbits fed on diets of other treatments.2.The increase of feed intake of rabbits fed T4 and T6 may be due to that T4 and T6 were more suitable than treatments of the other groups of rabbits.3.Results showed that male rabbits consumed more feed than females at the first period (6-9 weeks), second period (9-12 weeks) and the whole period (6-16 weeks) but the reverse was observed during the third period (12-16 weeks). The differences due to sex effect on daily feed intake was not significant. Feed conversion:1. Feed conversion values were nearly similar in all treatments at the second, third period and whole period. The differences in feed conversion value due to treatments was significant (P<0.05) only in the first period2. Results showed that female rabbits were more efficient for feed conversion than males. The differences between the two sexes were significant (P<0.05) only during the 3rd period (12-16 weeks). Digestibility:1.Results showed that rabbits received diets of T3 and T7 (including 25% SBP and 40% PBM) recorded almost higher digestibility for most nutrients (DM, OM CP, CF and NFE) than rabbits of the other treatments.2.The lowest value of the nutrients digestibility were recorded for rabbits given Ti (control diet), T2 (diet containing 10% SBP), T4 (diet containing 40% SBP), T5 (diet containing 10% PBM) and T6 (diet containing 25% PBM).3.The differences in nutrients digestibility due to treatment effect were not significant. It could be concluded that inclusion of sugar beet pulp and potato by-product meal at levels of 25 and 40% of diets for growing rabbits gave positive influence in improving digestibilities of different nutrient of the experimental diets. Coprophagy status:1.Results of the present study showed that values of all nutrients digestibility (DM, OM, CP, EE, CF and NFE) for uncollared rabbits were higher than those for collared ones. And this indicated that the prevention of coprophagy in rabbits decreased the digestibility of all nutrients.2.The differences in all nutrient digestibilities due to coprophagy status were significant (P<0.05, 0.01 or 0.001).Carcass traits %:1.Results showed that values of dressing percentage as affected by different level of experimental diets were 51.47, 51.76, 51.91, 52.90, 52.12, 49.26 and 50.09% for T1 (control), T2 (10% SBP), T3 (25% SBP), T4 (40% SBP), T5 (10% PBM), T6 (25% PBM) and T7 (40% PBM), respectively.2.These results indicated that rabbits received the diet containing 40% sugar beet pulp (SBP) (T4) showed the highest dressing percentage (DP%) value, while the lowest value of DP% was given by rabbits of T6 which contained 25% potato by-product meal (PBM).3.No significant differences were detected in dressing percentage of rabbits fed the experimental diets. In general there were no significant differences due to treatment effect on percentages of all carcass traits. Meat composition:The present results showed that differences between means of CP, EE and ash content of meat differed slightly with treatments without significant differences. Blood components:1.Results of blood plasma components of rabbits showed that differences due to treatments in albumin, globulin, creatinine, urea, GOT and GPT were statistically non-significant, while were highly significantly (P<0.01) on total protein only.2.In general, values of blood plasma components of rabbits fed the six experimental diets almost surpassed those of rabbitsfed the control diet (T1).Summaty& Conclusions 100Cecum activity:1.Differences between means of total bacterial count of cecum contents in rabbits fed the experimental diets were highly significant (P<0.001) but E. coli seems to be undetected.2.The analysis of variance of pH of cecum content refer to non-significant effect of treatment on pH. Some doe traits:1.Results showed that there were no difference caused by differences in nutritional treatments of the study in doe weight at kindling and at weaning of its litter, feed intake of doe, size and weight of the litter in produced at kindling and at weaning.2.Results showed that rabbits fed the experimental diet of T6 was better than those of other groups of the study in reproductive performance. Economic efficiency:1 The results showed

that, during the period of 6-9 weeks of age the highest feed cost for males and females of T1 with diet without any by-products was recorded as 6.5 and 7.2 PT, respectively, followed in desconding order by those of T5 with a ration containing 10% PBM (6.6 and 6.2 PT, for males and females, respectively), while the lowest costs were (4.9 and 4.5 PT) for males and females, which received the diet of T7 (ration containing 40% PBM). Moreover, the same trend of feed cost was observed at all age intervals of the study (9-12, 12-16 and 6-16 weeks of age).Summary& Conclusions 1012.The best average economic efficiency (net revenue, PT/fed cost, TP) value was almost shown by rabbits of T7 (diet including 40% PBM) at all age intervals of the study followed by that of rabbits of T3 (diet including 25% SBP).3.Assuming that the relative economic efficiency % values of the control T1 equal 100, rabbits of T7 recorded the best values of economic efficiency at (6-9), (9-12), (12-16) and (6-16) weeks of age being 148.1, 177.8, 200 and 187.5%, respectively. Recommendation:Under conditions of the present experiment it could be recommended that:1.The rabbits can be fed on diets containing industrial by-product such as dried sugar beet pulp and potato by-product meal at levels of 10, 25 and 40% without any adverse effect on growth and reproductive performance.2.The best performance and economic efficiency of the diet was that of T7 (diet containing 40% potato by-product meal) followed by T3 (diet containing 25% sugar beet pulp).3.It appears that the inclusion of tested feed stuff when included in the rabbit diets is partically effective in growth and reproductive traits and thus a more cheaper final product could be achieved. This is of great benefit in case of shortage in conventional feed stuffs.