

**Performance of Male New Zealand Rabbits Fed Date Fruits (*Phoenix dactylifera*) Based Diets
Ettu, R.O., Ikotun, T.O., Kassim, H.G. and Mako, A.A.**

Department of Agricultural Science,
Tai Solarin University of Education, Ijebu-Ode, Ogun State, Nigeria
Correspondence E-mail & Phone number: etturo@tasued.edu.ng, +2347033379179

Abstract

The study was carried out to investigate the performance of male New-Zealand white rabbits fed dates based diets. Sixteen male rabbits were used for the study and were randomly allocated to four groups with three replicates in a randomized block design. Group A was fed with 500 g growers mash (control), Group B ate 375 g grower mash plus 125 g of Date fruits, Group C ate 250 g of Date fruits and Group D consumed 125 g of grower mash plus 375 g of Date fruits. The initial body weight, final body weight, body weight gained, average daily weight gain and total feed intake were mostly significantly ($p < 0.05$) different from each other except for the initial body weight in Group B (375 g growers' mash plus 125 g Date fruits) and (250 g growers' mash plus 250 g Date fruits) where they were not significantly different ($p < 0.05$) from each other. As the level of inclusion of date fruits increased in value except in treatment D (125 g growers' mash plus 375 g Date fruits), it was concluded that date fruits did not in any way threaten the well-being of male New Zealand white rabbits.

Keywords: Date fruits, Growers' mash, New Zealand white rabbits

Introduction

Livestock in the tropics and subtropics is mostly influenced by the seasonal scarcity and low quality of feed resources, and livestock makes a substantial contribution to the wellbeing of the people. Domestic rabbits were derived from *Oryctolagus Cuniculus* of temperate origin. Various breeds of rabbits are kept for several reasons such as meats and fur. The breeds are known to have many desirable traits such as rapid growth rate, good carcass quality and mothering ability (McNitt *et al.*, 2000). Rabbits are herbivorous animals with small body size, short gestation interval, high reproductive potential and rapid growth rate (Cheeke, 1999). It is tough to set strict energy requirements for different categories of rabbits (Okusanya, 1999), but the crude protein requirement is 16%, as stated by Lebas *et al.* (1986). Rabbit fryers fed diets containing *psyllum* seed husks had improved rabbit carcass composition (higher weights and dressing percentages) changed fatty acid profiles, and tended to have lower cholesterol (Megan, 2016). Date seeds are the by-products of dates stoning, either for the production of pitted dates or for the manufacture of dates paste (Barreveld, 1993; Koshteh and Kamalian, 2004). Date seeds are traditionally used for animal feed. They can be used as a source of oil (which have antioxidant properties valuable in cosmetics), as a coffee substitute, as a raw material for activated

carbon or as an adsorbent for dye-containing water (Koshteh and Kamalian, 2004). Nutrition more than any other factor is probably responsible for the inferior performance in terms of the growth rate of rabbits in the tropics (Barreveld, 1993; Koshteh and Kamalian, 2004). Most of the calories in the dates come from carbs. The rest are from a very small amount of protein (Briann, 2018). Despite their calories, dates contain some important vitamins and minerals in addition to a significant amount of fibre. Briann (2018) further reported that dates are also high in antioxidants which may contribute to many of their health benefits. With almost 7 grams of fibre in a 3.5 ounce serving, including dates in your diet is a great way to increase your fibre intake. As compared to another dried fruits, dates can therefore be considered a reasonable source of vitamins (USDA, 2011). They are also considered to protect against many chronic diseases including cancer and heart diseases (Al-Taher, 2008). The aqueous extracts of dates have also been shown to have antidiarrheal effects in rats (Al-Taher, 2008). Dates are a good source of fibre and contain many important vitamins and minerals including significant amount of calcium, iron, fluorine and selenium, and low in sodium (Al-Farsi *et al.*, 2005; Khan *et al.*, 2008 and Ali *et al.*, 2018). According to Omole and Onwudike (2000), the nutrient

should be adequately balanced for optimum productivity. The quest for cheaper and available sources of feed ingredients without adverse effect on the performance of non-ruminants such as rabbit is a continuous exercise. The study aimed to investigate the performance of the experimental animals fed date based diets.

MATERIAL AND METHODS

The Study Location

The experiment was carried out in the Rabbitry unit of the Teaching and Research farm, Tai Solarin University of Education, Ijagun, Ogun State. The study area was located in the moderately hot, humid, tropical climatic zone of southwestern Nigeria, with distinct wet and dry seasons. The temperature of the study area varies from 23 °C to 33 °C while the humidity during the wet season varies between 78 and 87%.

Experimental Design

Date fruits were sourced from the market, washed and air-dried. The dried date fruits were milled into powder form and mixed with the commercial feed according to the feeding trials. A total of sixteen (16) weaned male

rabbits were used for the study. The rabbits were acclimatized for seven days after which they were randomly allotted into four groups with four replicates in a completely randomized design. Each group was replicated four times with one rabbit per replicate. Experimental diets include crushed date fruits with compounded growers' mash. The groups were denoted as A (control, 0% date fruits), B, C and D containing 25%, 50% and 75% inclusion of date fruits, respectively (Table 1). Table 2 shows the chemical composition of date fruits and grower's mash. The experiment lasted for a month.

Data Collection

The rabbits were usually weighed between 8 - 9 am before feeding daily. The feed is given, and the leftovers were also weighed daily. The experiment lasted for twenty-eight days.

Data Analysis

Data obtained were subjected to a one-way analysis of variance using statistical package for social Scientist (1999). Differences between treatment means were separated using Duncan Multiple Range Test (Duncan, 1955).

Table 1: Composition of experimental diets

Treatment	Grower mash (g)	Date fruits (g)
A (Control)	500	0
B	375	125
C	250	250
D	125	375

Table 2: Chemical composition of experimental diets (%)

Chemical composition (%)	Date fruits	Growers' mash
Dry matter	85.96	88.35
Crude fibre	27.24	13.11
Ether extract	0.09	2.90
Crude protein	5.11	16.13
Nitrogen free extract	0.203	50.24

Results and Discussions

The parameters measured make mostly significantly ($p < 0.05$) different from each other except for the initial body weight in treatment B (375 g grower mash + 125 g Date fruits) and C (250 g grower mash + 250 g Date fruits) while they were not significant ($P > 0.005$) difference between the rabbits in a treatment A, B, and D (Table 3).

As the level of inclusion of Date fruits increased, the parameter measured increased in value except in treatment D (125 g grower mash + 375 g Date fruits) where the results obtained in all the parameter decreased as a result of an increase in the level of date fruits in the diet (Table 3). Generally, the results indicated that crushed dates allow nutrient availability which agrees with the submissions of Al-Farsi *et al.*, 2005 and Khan *et al.*, 2008

that grinding increases nutrient availability in

Date fruits.

Table 3: Performance of rabbits fed dates (*Phoenix dactylifera*) based diets

Performance characteristics	Groups				SEM
	A	B	C	D	
Initial Body Weight (kg)	3.5 ^c	3.7 ^b	3.7 ^b	3.8 ^a	0.004
Final Body Weight (kg)	3.7 ^d	3.9 ^c	4.1 ^a	4.0 ^b	0.002
Body Weight Gain (kg)	0.2 ^b	0.2 ^b	0.4 ^a	0.2 ^b	0.0001
Average Daily Weight Gain (g)	0.007 ^b	0.007 ^b	0.014 ^a	0.007 ^b	0.00006
Total Feed Intake (g)	11760 ^b	11200 ^d	12600 ^a	114800 ^c	8.278
Average Feed Intake (g)	420 ^b	400 ^d	450 ^a	410 ^c	3.18
Feed Conversion Ratio	0.0004 ^c	0.0005 ^b	0.0008 ^a	0.0005 ^b	0.0009

SEM - Standard Error of Means

Conclusion

Date fruits do not possess any danger to the wellbeing of male rabbits (buck) based on the findings of this experiment. Further research could be carried out to determine its effects on female rabbits (Doe) as well as on some other breeds of rabbits.

References

- Al-Farsi, M., Alasalvar, C., Morris, A., Baron, M., and Shadihi, F. 2005. Composition and sensory characteristics of three native sundried date (*Phoenix dactylifera* L.) varieties grown in Oman. *Journal of Agriculture and Food Chemistry*, 53, 7586 – 7591
- Ali, A., Waly, M.I., Musthafa, M.E. and Devarajan, S. 2012. Nutritional and medicinal value of date fruit. <https://www.researchgate.net/publication/257416165>
- Al-Taher, A.Y. 2008. Possible antidiarrheal effect of date-palm (*Phoenix dactylifera* L.) aqueous extracts in rats. *Scientific Journal of King Faisal University (Basic and Applied Sciences)*, 9: 1429 – 1435.
- Barrevel, W.H. 1993. Date-palm products. Bulletin No 101. Rome, Italy: Food and Agriculture Organization of the United State.
- Brianna Elliot, R.D. 2018. 8 Proven Health Benefits of Dates. <https://www.healthline.com/nutrition/benefits-of-dates#section9>
- Cheeke, P R. (1999). Potentials of rabbit production in the Tropical ad sub-tropical Agric, Syst. *J. of Anim. Sci* 63: 1582-1586.
- Duncan, D.B. (1955). Multiple Range and Multiple F. Tests. *Biometrics*, 11: 1- 42
- Khan, M., Sarwar, A., Wahab, M., and Haleem, R. 2008. Physio-chemical characterization of date varieties into picklets. *International Journal of Food Science and Technology*, 22: 243 – 247.
- Koshen, K. and Kamalian, A.R. 2004. Dates marketing and exporting challenges in Iran. *Acta Horti*, 655, 333 – 339.
- Lebas, F., Loudert, P., Rouvier, R., de Rochamber, H 1986. The rabbit husbandry, health and production, F.A.O. Series No. 21.
- McNitt, J.J., Patton, N.M., Lukefahr, S.D. and Cheeke, P.R. (2000). Rabbit Production, 8th edition, Interstate printers and publishers Inc. Danville, Il, USA
- Megan, L. 2016. Investigating the effect of feeding diets containing *psyllum seed husk* on rabbits. *Journal of Animal Science*.
- Okusanya, A.T. (1999). Performance of rabbit fed *Amaranthus hypochondriacus*. M.Sc Project report, University of Ibadan, Ibadan, 8-12.
- Omole, T.A. and Onwudike, V. (2000). Effect of diets on rabbits growth, Macmillan Publications 23; 91
- SPSS (1999). Statistical Package for Social Sciences. Procedure and facilities for release. 6.0 Users' Manual, McGraw-Hill Book Co. NY.
- United States Development of Agriculture (USDA), 2011. National database for standard reference. <http://www.nal.usda.gov/fnic/foodcomp/cgi-bim/list-nut-edit.pl>