EVALUATION OF RUMEN FILTERATE FOR FERMENTATION OF SWEET ORANGE (*Citrus sinensis*) PEEL IN RABBIT FEED

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PURPOSE

RATIONALE

- Feeding accounts for about 70% of the total cost of non-ruminant animal production in Nigeria because of the competition between man and his animals for the conventional foodstuffs
- Shortage of animal protein intake therefore persists because of insufficient supply of animal products partly caused by inadequate and expensive conventional feedstuffs.
- Sweet orange peels and rumen content are abundant agricultural by-products in Nigeria (Oluremi *et al.,* 2010; Aneibo *et al.,* 2009) causing environmental problems, but could be harnessed for rabbit feeding.

OBJECTIVE

- To determine the potential of bovine rumen filtrate as a natural source of inoculants to improve the nutritive value of sweet orange (*Citrus sinensis*) peel by fermentation process in rabbit production.

Fresh sweet orange peels

Bovine rumen filtrate

Sun-dried sweet orange peels

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METHODS

LOCATION

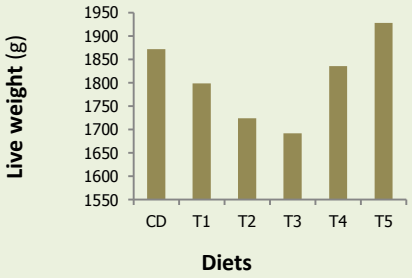
- The experiment was done at the Rabbitary unit of the Livestock section in the Teaching and Research Farm, Federal University of Agriculture Makurdi, Nigeria

SOURCE AND PREPARATION OF SAMPLES

- Fresh sweet orange peels (SOP) were collected from peeled sweet orange sellers in Makurdi and divided into five equal parts
- Fresh rumen content was collected from four (4) randomly selected slaughtered cattle at Wurukum abattoir in Makurdi and mixed. Potable water was added to the resulting mass at the ratio 1:1, stirred and sieved to obtain rumen filtrate (RF) which was added to and mixed in multiples of 1 litre with 5kg each of the five portions of SOP in ratio 1:5 (T1), 2:5 (T2), 3:5 (T3), 4:5 (T4) and 5:5 (T5). Each was put in polythene bag, tied at the open end, kept for 24hours to ferment, thereafter sundried to less than 10% moisture within 48 hours and milled.
- Each of the processed SOP (T1), (T2), (T3), (T4) and (T5) was used to replace 30% maize in a practical rabbit diet (CD) to obtain T1, T2, T3, T4, and T5, respectively

EXPERIMENTAL DESIGN AND DATA COLLECTION

- Thirty healthy mixed breed growing rabbits were randomly allocated to the six diets at the rate of 5 rabbits per diet.
- The feeding trial lasted for 91 days during which performance indices: growth, carcass and coefficient of nutrient digestibility were determined
- SOP, feed and faecal samples were analysed for proximate constituents (AOAC, 2000) at the Animal Care Laboratory, Ogun State Nigeria.
- Indices were subjected to ANOVA using Minitab (1991) and means of data significantly different ($p<0.05$) were separated by least significant difference



RESULTS

- The CP, CF and ash content of SOP tended to increase while, the NFE and ME decreased as the quantity of rumen filtrate added to the SOP increased.. Rabbits in T5 had comparatively higher live weight of 1928.00g, 15.85g BWG and loin weight of 12.83%, than the rabbits in CD, T1, T2, T3 and T4. All the other growth indicators, organs, and coefficient of nutrient digestibility were not significantly ($p>0.05$) affected by the experimental diets.

CONCLUSION

The proximate constituents of the bovine rumen filtrate treated and Fermented SOP were inferior to maize. The levels of these nutrient indices showed that SOP processed as in this study can be utilized as energy feed ingredient in rabbit diet. Rabbits in group T5, fed the diet containing SOP treated in ratio 5:5 had a comparative performance advantage over rabbits fed the maize based diets. Bovine filtrate when added in ratio 5:5 with SOP can be used to improve the nutritive value off SOP for maize replacement at 30% in rabbit feed. Further studies are imperative to elucidate processing method(s) of SOP that would enhance its feeding value by reducing its CF content

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