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ABSTRACT

The study was conducted at Banig, Tawang La Trinidad ,Benguet on February 2012 to determine the digestibility coefficient of nutrients in diets supplemented by carrot meal in swine and determine the digestibility coefficient of nutrients of carrots.

A total of nine heads of crossbreed (Duroc x Largewhite) female finishing pigs at an average of 85kg were randomly distributed into three treatments and each treatment was replicated three times with one pig per replicate to make a total of three pigs per treatment. The treatments were: pure commercial feeds, 200g carrot meal/ kg of commercial feeds, and pure carrot meal.

Analysis showed carrot meal contains 85.53% for dry matter, 9.49% for ash, 6.70% for crude protein, 2.43% for crude fat, 15.35% for crude fiber, 51.56% for nitrogen free extract, and for 3,380 kcal GE/kg.

Results showed that supplementing carrot meal to pigs had effect on the apparent digestibility and digestibility nutrient per kilogram in ash, crude protein, crude fat, gross energy, nitrogen free extract, dry matter, and crude fiber.

The digestibility of nutrient in carrot meal are as follow 91.87% for dry matter, 88.03% for ash, 74.21% for crude fat, 94.18% for nitrogen free extract, 92.21% for crude fiber and 90.977% for gross energy.

While statistical analysis revealed significance differences between the treatments in terms of ash, crude protein, crude fat, gross energy, nitrogen free extract, and dry matter for apparent digestibility, it also revealed significant differences among the treatments in terms of ash, crude protein, crude fat, and crude fiber for digestible nutrient.

The digestible nutrient of carrot meal was computed as follows: 141.54g dry matter, 83.54g ash, 57.010g crude protein, 18.03g crude fat, 485.61g nitrogen free extract 141.54, and 3073g gross energy.

Differences among the treatment in terms of digestible nutrient per kilogram are not significant for gross energy, nitrogen free extract, and dry matter.

INTRODUCTION

Digestibility is the percentage of a particular nutrient in the diet that an animal could absorb from its digestive tract and made available to use for maintaining life and producing offspring, body weight gain, milk, eggs, wool, and etc. By definition, apparent digestibility is considered to be the difference between amounts fed and amounts recovered in feces. Some of the previous nutrition researches had good estimates regarding apparent digestibility of ingredients that can be combined to estimate total ration digestibility. Farmers, often with the help from the consulting nutritionist, formulate rations of known digestibility for animals based on performance expected from those animals. Knowing the digestibility of nutrients in a feedstuff would permit us to estimate the amount that could be incorporated in diets of animals.

Carrot is one of the popular vegetable crops in the Cordillera. It is a good source of calcium and carotene and, a precursor of vitamin A (Knott and Deanon, 1967). In fact, (Garcia, 1978) reported that every 100 grams edible portion of carrot gives 55 calories (food energy), 1.3 grams of calcium, 283 grams potassium, and 18, 520 I.U. of vitamin A. Carrot is also used as substitute for other succulent feeds in the regular dairy ration of milking cows and it has a great value to human and animal nutrition. Nevertheless, the student needs to explore and understand the possible effects of using carrot pulp meal as feed for swine, particularly in knowing the digestibility of nutrients that it contain.

It is important to study the digestibility of the dried carrot meal in swine so that we can have a clear view as to what extent we can use as the feedstuffs of carrot meal as a source of nutrients for swine and it could be much good for the swine raisers.

Specifically, this study was conducted to:

1. determine the digestibility coefficient of nutrients in diets supplemented by carrot meal in swine; and

2. determine the digestibility coefficient of nutrients of carrots.

The study was conducted in February 2012 at Banig Tawang, La Trinidad, Benguet.

REVIEW OF LITERATURE

Significant improvements in grain processing technology have been made over the past 30 years, resulting in improvements in nutrient utilization for pigs. Decreasing particle size of grain in swine diets increases surface area, allowing for greater interaction with digestive enzymes and improved digestibility (Healy *et al*., 1994). Feed costs are the greatest economic cost of swine production, and improving the efficiency of feed utilization has a tremendous impact on the cost of production (Goodband *et al*., 1995).

In nutrition, its most useful application is in determining the digestibility energy value of feedstuffs, since the gross energy value has little or no direct application as it does not give any indication on how much of the energy in feedstuffs is really used by the animal for its various functions (Church and Pond, 1982). According to (Goby and Gidenne, 2001) dehydrated whole carrot could be considered as good source of nutrients for the growing rabbit (DE=2160 kcal/kg, protein digestibility=65%, for a raw product with a humidity of 107 g/kg). Its nutritive value could be improved by reducing the level of minerals in the product. In a digestibility trial, the food under investigation is given to the animal in known amounts and the output of feces measured. More than one animal is used, firstly because animals, even when of the same species, and sex, differ slightly in their digestive ability, and secondly because replication allows more opportunity for detecting errors of measurement (Mc Donald *et al*., 1995). Dry matter digestibility of a diet is traditionally evaluated by total collection of the feces from animals housed in metabolic crates or use of external markers (Chromium oxide or chromium mordanted fibre).

Naturally occurring dietary markers have advantages over external markers and total collection, particularly in field conditions where traditional methods are often expensive,

labour intensive, and impractical. The difficulty associated with the total collection method in small animal species led to present study. Acid-insoluble ash (AIA) is naturally occurring marker that has been used to asses digestibility of diets fed to monogastrics and ruminants (McCarthy *et al.*, 1974, pigs; and Moughan *et al*., 1991, pigs). Mc Donald *et al*. (2002) mentioned that in digestibility trial, food under investigation is given to the animal in known amounts and the output of feces is measured. It is desirable that meals should be given at the same time each day and that the amounts of food eaten should not vary day to day.

Gross energy is measured in an apparatus known as a bomb calorimeter, which in its simplest form consists of a strong metal chamber (the bomb) resting in an insulated tank of water. The food sample is placed in the bomb and oxygen admitted under pressure. The temperature of the water taken and the sample is then ignited electrically. The heat produced by the oxidation is absorbed by the bomb and the surrounding water, and when equilibrium is reached the temperature of the water is taken again. The quality of heat produced is then calculated from the rise in temperature and the weights and specific heats of the water and the bomb. The bomb calorimeter can be used to determine the gross energy content of whole foods or of their constituents and of animal tissues and excretory products (Mc Donald *et al*., 2002)

MATERIALS AND METHODS

Materials

The materials used in the study include: 9 heads of crossbreed (Duroc x Largewhite) female finishing pigs weighing about an average of 85 kg, "Takiis" variety of carrot, commercial feeds, weighing scale, dehydrator, juicer, oven, pig pen, feeding trough, disinfectants, stick broom, recording materials, chromic oxide, foil tray, and HDP for storing samples.

Preparation of the Carrot Meal

The carrot pulp was collected and washed thoroughly. Then, it was passed through to a juicer to separate the juice from the pulp. Furthermore, the carrot pulp was placed in the oven overnight to reduce the water content up to approximately 10% moisture. Finally, it was weighed based on the specific amount per treatment before it was given to the experimental animals.

Digestibility Trial

This digestibility trial was conducted simultaneously with the feeding trial. In the digestibility trial, 5 days served as the pre- experimental period and the remaining 5 days, as the collection period. The experimental units were fed in restricted feeding depending on the amount of feeds that the animal may eat. Indicator method was used in the digestibility study.

Feeding Trial

This study was conducted for 10 days. The amount of feeds offered to all the animals is 2 kg/day/head in restricted feeding.

Experimental Designs and Treatments

The nine weaned pigs were distributed at random into 3 treatments following the Completely Randomized Design (CRD). Each treatment was replicated 3 times with one pig per replication. Each pig was confined in one pen then the individual weights of the experimental animals was taken first and was recorded before placing them into their respective pens.

The different treatments that were used in the study are the following:

T_0- pure commercial feeds

T_1- 200 g carrot meal/ kg of commercial feeds

T_2- pure carrot meal

The following were the data gathered:

1. Weight of the pigs at the start of collection (kg). This was the weight of experimental animals at the start of the study or experimental period.

2. Feed intake (kg). This was the total feed intake of the individual animals during the study wherein their fecal output will be collected.

3. Fecal output (kg). This was the total fecal output of the animal or the total amount of feces voided by the animal during five days experimental period.

From the above data, the following were computed:

1. Nutrient content of feed and feces. The % dry matter, % crude protein, % crude fiber, % ash, and % crude fat content of both feed and feces were determined using

appropriate analytical procedures in proximate analysis (AOAC, 1965). The % nitrogen free extract was determined by difference. The energy content of both feed and feces was determined by Bomb- calorimetry. The specific procedures were as follows:

a. Dry matter. Dry matter determinations of feed was done by oven-drying 3 x 50g samples for 24 hours at 102 ^{0}C;

$$\% \text{ Dry Matter} = \frac{\text{Original Weight- Oven Dried Weight}}{\text{Original Weight}}$$

b. Crude protein. This was determined by using this formula % CP= %N x 6.25, where nitrogen was determined using the Microkjedahl method. Percent nitrogen was then computed using the formulas:

$$\% \text{ N} = \frac{(\text{T-B}) \times \text{N} \times 0.014}{\text{S}} \times 100$$

Where: T = Sample ml

B= Blank ml

N= Normality of standard acid- titrant

S= Weight of sample in grams

c. Crude fiber. This was determined by using an ether- extracted sample, boiling in diluted acid, boiling diluted base, filtering, drying, and burning in a furnace.

d. Gross energy of feeds and feces. This was determined using the bomb-calorimetry technique.

e. Ash. This was determined by the residue remaining after all the combustible material has been burned off (oxidized completely) in a furnace heated to 500 to 600^0 C.

f. Nitrogen Free Extract. This was determined by the difference of the original sample weight and the sum of weights of water, ether extract, crude protein, crude fiber, and ash.

2. Apparent digestibility of nutrients. This was computed using the formula:

$$AD\% = 100 - \left[100 \times \frac{\%\ \text{Indicator in feeds}}{\%\ \text{Indicator in feces}} \times \frac{\%\ \text{Nutrient in Feces}}{\%\ \text{Nutrient in Feeds}} \right]$$

3. Digestible nutrient of feeds and feces. This was determined by using the formula Digestible Nutrient/kg of feed= 1000g x % Nutrient in feed x % Digestibility.

RESULTS AND DISCUSSION

Nutrient Content of Feed Sample

The nutrient content of the different diets used in the study is presented in Table 1. Analysis showed that the commercial feed contains 92.32 % DM, 4.43% ASH, 14.27% CP, 5.90% CF, 3.56 CFi, 64.26% NFE, and 4,078 kcal GE/kg. The ration in which 200g carrot meal was added to 1 kg of commercial contains 91.30%DM, 5.46%ASH, 11.75%CP, 5.38%CF, 6.73%CFi, 61.98% NFE, and/ 3,970 kcal GE/kg. On the other hand, carrot meal contains 85.53%DM, 9.49% ASH, 6.70% CP, 2.43% CF, 15.35% CFi, 51.56% NFE and 3,380 kcal GE/kg.

Cullison (1979) reported that dried carrots at 100% DM contain,10.3% CP and 9.7%CFi. Although the dry matter content is not comparable, the percent CP content of carrot meal which is 6.70% that is obtained in this study is much lower than the 10.3% reported by Cullison (1979).

Dry matter. The dry matter content of the commercial feeds, 200g carrot meal per kilogram of commercial feeds, and carrot meal were 92.32%, 91.30%, and 85.53%.

Table1. Nutrient content of feeds or experimental diets

TREATMENT	% DM	% ASH	% CP	%CFAT	%CFI	GE
Commercial feeds	92.32	4.43	14.17	5.90	3.56	4078
200 g carrot meal/kg commercial feeds	91.30	5.46	11.75	5.38	6.73	3970
Carrot Meal	85.53	9.49	6.70	2.43	15.35	3380

The commercial feeds obtain the highest DM content of 92.32% followed by the mixture of 200g carrot meal per kg of commercial feeds that contain 91.30%. On the other hand carrot meal has the lowest dry matter content of 85.53%

Ash. The ash content of the commercial feed, 200g carrot meal per kilogram of commercial feeds, and carrot meal were 4.43%, 5.46%, and 9.49% .Carrot meal has the highest ash content of 9.49% followed by 200g carrot meal per kilogram of commercial feeds that contain 5.46% and commercial feeds has the lowest ash content of 4.43%. National Science Development Board (NSDB) (1968) claimed that carrot contains 9% ash.

Crude protein. The crude protein content of commercial feeds, 200g carrot meal per kilogram of commercial feeds and carrot meal were 14.17%, 11.75%, and 6.70%. It shows that the commercial feed has the highest crude protein content of 14.17% compared to the 200g carrot meal per kilogram of commercial feeds which has the crude protein content of 11.75%. The content of carrot meal has the lowest value of 6.70% compared to the contents of the crude protein reported by Cullison (1979) which is 10.3%.

Crude fat. The crude fat content of commercial feeds, 200g carrot meal per kilogram of commercial feeds, and carrot meal were 5.90%, 5.38%, and 2.43%. Commercial feed has the highest crude protein content of 5.90% followed by 200g carrot meal per kilogram of commercial feeds that contain 5.38% and carrot meal has the lowest crude content of 2.43%.

Crude fiber. The crude fiber content of the commercial feed, 200g carrot meal per kilogram of commercial feeds, and carrot meal were 3.56%, 6.73%, and 15.35%. The analysis shows that the carrot meal has the highest crude fiber content of 15.35% followed by 200g carrot meal per kg of commercial feeds that contain 6.73%, and commercial feed

has the lowest crude fiber content of 3.56% .According to Cullison, the crude fiber of carrot is 9.7% and this is lower than 15.35% which is the crude fiber of the experimental diet of carrot meal. According to Cullison (1979) also the crude fiber in carrot consists of cellulose, hemicelluloses, hemicelluloses and lignin, with cellulose being the most abundant.

Gross energy. Commercial feed has the highest value of 4078kcal/kg followed by the combination of 200g carrot meal per kg of commercial feeds which has a value of 3970 kcal/kg. Lower value of gross energy was obtained by the carrot meal with the value of 3380 kcal/kg. The gross energy content of commercial feeds and carrot meal mixture decrease compared to the gross energy content of commercial feed due to the reason of lower gross energy content of carrot meal. According to Sauvant *et al.* (2004), corn contains 16.2 kcal/kg gross energy and this is lower compared to the gross energy of carrot meal which is 3380 kcal/kg.

Apparent Digestibility of Nutrient

The apparent digestibility of nutrient in the different ration in hogs weighing 85 kg is presented in Table 2. The digestibility of nutrients in the commercial ration were 76.66% for dry matter, 25.77% for ash, 80.233% for crude protein, 74.71% for crude fat, 77.270% for gross energy, and 85.96% for nitrogen free extract. The commercial feeds and 200g carrot meal per kg of commercial feeds contain 72.80% for dry matter, 38.31% for ash, 69.837% for crude protein, 69.27% for crude fat, 80.86% for nitrogen free extract, 34.62% for crude fiber, and 74.740% for gross energy.

Table 2. Apparent digestibility of Dry Matter, Ash, Crude Protein, Crude Fat, Nitrogen Free Extract, Crude Fiber, and Gross Energy (%) obtained in 85kg hogs.

TREATMENT	DM	ASH	CP	CFAT	NFE	CFIBER	GE
Commercial Feeds	76.66[b]	25.77[b]	80.233[a]	74.71	85.96[a]	-	77.270[a]
200g carrot meal Per kg of CF	72.80[b]	38.31[b]	69.837[b]	69.27	80.86[ab]	34.62[b]	74.740[b]
Carrot meal	91.87[a]	88.03[a]	85.083[a]	74.21	94.18[b]	92.21[a]	90.977[b]

While the digestibility of nutrient in the carrot meal were 91.87% for dry matter, 88.03% for ash, 85.083% for crude protein, 74.21% for crude fat, 94.18% for nitrogen free extract, 92.21% for crude fiber, and 90.977% for gross energy.

Dry matter. Statistical analysis revealed that there were significant differences between hogs fed with commercial feeds and hogs given 200g carrot meal per kg of commercial feeds and those hogs given pure carrot meal. Lower dry matter digestibility of 76.66% and 72.80% was obtained from commercial feeds and 200g carrot meal per kg of commercial feeds respectively. The carrot meal has higher dry matter digestibility of 91.87%.

Ash. The digestibility of ash in commercial feeds, 200g carrot meal per kg of commercial feeds and carrot meal were 25.77%, 38.31%, and 88.03%. Statistical analysis revealed highly significant differences among treatment. It means that the digestibility of ash that was fed with different dietary treatments was utilized by the animal. The carrot meal has the highest ash digestibility of 88.03%.

Crude protein. The digestibility of crude protein in commercial feeds and carrot meal were 80.233% and 85.083% respectively. The 200g carrot meal per kg commercial feeds had lower crude protein digestibility of 69.837%. Crude protein digestibility of pigs given 200g carrot meal per kg commercial feeds was significantly different from the commercial feeds and carrot meal.

Crude fat. The digestibility of crude fat content of commercial feeds, 200gram pure carrot meal per kg of commercial feeds, and carrot meal were 74.71%, 69.27% and 74.21%. Based on the statistical analysis there is no significant differences among the treatments. It means that the apparent digestibility of crude fat in hogs fed with different dietary treatment was more or less the same.

Nitrogen free extract. Statistical analysis showed that there are significant differences in the digestibility of nitrogen free extract between carrot meal and 200g carrot meal per kg of commercial feeds. The commercial feeds, 200gram carrot meal per kg of commercial feeds, and carrot meal has the digestibility of nitrogen free extract of 85.96%, 80.86%, and 94.18%. Nitrogen free extract digestibility of commercial feeds was not significantly different to the 200g carrot meal per kg of commercial feeds and carrot meal.

Crude fiber. Statistical analysis revealed highly significant differences on the digestibility of crude fiber given 200g carrot meal per kg of commercial feeds, and carrot meal. The 200g carrot meal per kg of commercial feeds had the lowest crude fiber digestibility of 34.62% and carrot meal has the highest crude fiber of 92.21%.

Gross energy. The digestibility of gross energy of the commercial feeds, 200gram carrot meal per kg of commercial feeds, and carrot pulp meal were 77.270%, 74.740%, and 90.937% respectively. The statistical analysis shows that there was a significant difference

among the treatments. It shows that carrot meal has the highest gross energy digestibility of 90.937% while the 200gram carrot meal per kg of feeds which is 74.740%.

Digestible Nutrient per Kilogram

Based on the nutrient content of the diets and the % digestibility obtained in 85kg hogs, the digestible nutrients in the different ration are in Table 3.The digestible nutrients of commercial feeds in hogs are 707.73g of dry matter ,11.41g of ash, 113.687g of crude protein, 44.08g of crude fat, 525.35g of nitrogen free extract, and 3151 gross energy. On the other hand 200g carrot meal per kilogram of commercial feeds contain digestible nutrients of 664.71g of dry matter, 20.92g of ash, 82.053g of crude protein, 37.27g of crude fat, 501.17g of nitrogen free extract, 23.29g of crude fiber, and 2967 of gross energy. The digestible nutrients of carrot meal are 785.73g of dry matter, 83.54g of ash, 57.010g of crude protein, 18.03 of crude fat, 485.61 of nitrogen free extract, 141.54g of crude fiber and 3023.667g gross energy.

Table 3. Digestible nutrients in 1000g of the ration

TREATMENT	DM	ASH	CP	CFAT	NFE	CFIBER	GE
Commercial Feeds	707.73	11.41[b]	113.687[a]	44.08[a]	552.35	-	13.19
200g carrot meal per kg of CF	664.71	20.92[b]	82.053[b]	37.27[a]	501.17	23.29[b]	12.42
Carrot meal	785.73	83.54[a]	57.010[c]	18.03[b]	485.61	141.54[a]	12.86

Dry matter. The digestible dry matter in rations of commercial feeds, 200g carrot meal per kg of commercial feeds, and carrot meal were 707.73%, 664.71%, and 785.73%.

The statistical analysis revealed that there were no significant differences among the treatments. The carrot meal has the highest digestible dry matter of 785.73%.

Ash. Statistical analysis showed that there is highly significant among the treatments. 85kg Hogs fed with carrot meal obtained the highest digestible nutrient per kilogram of ash which contains 83.54%. While the commercial feed contains the lowest ash content of 11.41%, and the mixture of 200g carrot meal per kg of commercial feeds obtained ash content of 20.92%.

Crude protein. The crude protein content of the commercial feed, 200gram carrot meal per kg of commercial feeds, and carrot meal were 113.687%, 82.053% and 57.010%. Statistical analysis revealed highly significant differences among the treatments. Commercial feeds has the highest crude protein content of 113.687% followed by 200g carrot meal per kg of commercial feeds that contain 82.053% and carrot meal which has the lowest crude protein content of 18.03%.

Crude fat. Statistical analysis revealed highly significant difference among the treatments in terms of digestible crude fat per kg. The crude fat content of the commercial feed, 200gram carrot meal per kg of commercial feeds, and carrot meal were 44.08%, 37.27% and 18.03% respectively. Commercial feeds has the highest crude fat content of 44.08% followed by 200g carrot meal per kg of feeds that contains 37.27% and hogs given carrot meal which has the lowest crude fat content of 18.03%.

Nitrogen free extract. The nitrogen free extract content of the commercial feeds, 200gram carrot meal per kg of commercial feeds, and carrot meal were 525.35%, 501.17% and 485.61%. Statistical analysis revealed that there were no significant differences among the treatment. Commercial feed has the highest nitrogen free extract content of 522.35%

followed by 200g carrot meal per kg of commercial feeds which contain 501.17%, and carrot meal which has the lowest nitrogen free extract content of 485.61%.

Crude fiber. The crude fiber content of 200g carrot meal per kg of commercial feeds and carrot meal was 23.29% and 141.54%. The statistical analysis revealed that there is highly significant difference among the treatments. The carrot meal has the higher crude fiber content of 141.54%. Due to some factors in computing the commercial feeds, computation of the crude fiber is not included.

Gross energy. The statistical analysis revealed that there is no significant difference among the treatments. It means that the digestible nutrient of gross energy per kg in the different rations have no differences. The commercial feeds obtained the highest gross energy content of 3151kcal/kg.

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The study was conducted to determine the apparent digestibility and nutrient digestible per kilogram of commercial feeds, 200gram carrot meal per kg of commercial feeds, and pure carrot meal in hogs in terms of ash, crude protein, crude fat, gross energy, nitrogen free extract, dry matter, and crude fiber.

Results showed that supplementing carrot meal to pigs had effect on the apparent digestibility and digestibility nutrient per kilogram in ash, crude protein, crude fat, gross energy, nitrogen free extract, dry matter, and crude fiber. Analysis showed that the commercial feed contains 92.32 % DM, 4.43% ASH, 14.27% CP, 5.90% CF, 3.56 CFi, 64.26% NFE, and 4,078 kcal GE/kg. The ration in which 200g carrot meal was added to 1 kg of commercial contains 91.30%DM, 5.46%ASH, 11.75%CP, 5.38%CF, 6.73%CFi, 61.98% NFE, and 3790 GE/kg. On the other hand, carrot meal contains 85.53%DM, 9.49% ASH, 6.70% CP, 2.43% CF, 15.35% CFi, 51.56% NFE, and 3,380 kcal GE/kg.

The digestibility nutrients of the commercial rations were 76.66%DM, 25.77%ASH, 80.233% CP, 74.71%CF, 77.270%GE, and 85.96% NFE. The ration that contain commercial feeds and 200g carrot meal per kg of commercial feeds contain 72.80%DM, 38.31% ASH, 69.837% CP, 69.27% CF, 80.86%NFE, 34.62%CFi, 74.740% GE. While the digestibility of nutrient in the carrot meal were 91.87DM, 88.03%ASH, 85.083%CP, 74.21%CF, 94.18% NFE, 92.21% CFi, 90.977%GE/kg. The digestible nutrients of commercial feeds in hogs contain 707.73g of DM, 11.41g ASH, 113.687g CP, 44.08g of CF, 525.35g of NFE, and 3151GE. On the other hand 200g carrot meal per kilogram of commercial feeds contain 664.71g of DM, 20.92g ASH, 82.053g CP, 37.27g of CF,

501.17g NFE, 23.29g of CFi, and 2967 GE. The digestible nutrients of carrot meal contain 785.73g DM, 83.54g ASH, 57.010gCP, 18.03 of CF, 485.61 of NFE, 141.54g of CFi and 3023.667g GE.

While statistical analysis revealed significance differences between the treatments in terms of ash, crude protein, crude fat, gross energy, nitrogen free extract, and dry matter for apparent digestibility, it also revealed significant differences among the treatments in terms of ash, crude protein, crude fat, and crude fiber for digestible nutrient.

Differences among the treatment in terms of digestible nutrient are not significant for gross energy, NFE, and dry matter.

Conclusion

From the result of the study, carrot meal is a good feed supplement to swine because it contains the necessary nutrients needed by the hogs for their optimum performance. It is also highly digestible.

Recommendation

It is therefore recommended that carrot meal can be used as supplement diet for pigs. Also, digestibility of carrot meal can be done in different growth stages of pigs from weanling-finishing and further study can be done also in digestibility of carrot meal to improve the study results.

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