UTILIZATION OF CARBOHYDRATE POTENTIAL IN VARIOUS KINDS OF BANANA COB FLOUR BANANA IN KACANG GOATS

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ABSTRACT

The objective of this research was to observe the productivity in kacang goats which were given a complete feed containing flour of various types of banana plant weevils. The material studied in this study was six complete types of feed. Complete feed containing weevil flour from 5 banana plant varieties. Complete feed is prepared with a complete feed composition. The cattle used were 18 male bean goats, mean initial body weight, 15.42 ± 1.98 kg (CV: 13.73%) aged 10-15 months. Livestock is given complete feed containing banana weevil flour for 60 days. The cage is 12 m x 6m in size, construction has a floor platform as high as 140 cm, the enclosure is 1 x 1 m in size and 130 cm in height, equipped with a drinking area. The treatment was in the form of 6 complete types of feed with different formulations, consisting of CF0, CF1, CF2, CF3, CF4, and CF5 containing banana weevil flour with different varieties and control treatment (CF0). The research design used was a completely randomized design with five treatments of complete feed formulas containing hump flour of various banana varieties.The results of the research that the complete feed formulation containing Batu banana hump flour (CF2) and Kapok (CF3) produced the best productivity and performance response of Kacang goat. compared to treatment; CF0 CF1; CF4 and CF5.

Keywords: carbohydarate, Utilization flour banana, Kacang goats

الاستفادة من إمكانات الكربوهيدرات في أنواع مختلفة من طحين الموز الموز في ماعز الكاكان

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المستخلص

الهدف من البحث دراسة الإنتاجية في ماعز الكاكان الذي تم غلفا علفًا كاملاً يحتوي على دقيق من أنواع مختلفة من سوسة نبات الموز. كانت المادة التي تمت دراستها ستة أنواع كاملة من الأعلاف. علف كامل يحتوي على دقيق سوسة من 5 أصناف من نبات الموز. يتم تحضير العلف الكامل بتركيبة تغذية كاملة. كانت الحيوانات المستعملة 18 ذكور ماعز، متوسط وزن الجسم الأولي 15.42 ± 1.98 كجم (CV: 13.73٪) بعمر 10-15 شهرًا. تم إعطاء الحيوانات علفًا كاملاً يحتوي على دقيق سوسة الموز لمدة 60 يومًا. كان حجم القفص 12 م × 6 م، والبناء به منصة أرضية بارتفاع 140 سم، وحجم العلبة 1 × 1م وارتفاعه 130 سم، ومجهز بمنطقة للشرب. كانت المعاملة على شكل 6 أنواع كاملة من الأعلاف بتركيبات مختلفة، تتكون من CF0 وCF وCF2 وCF3 وCF4 وCF5 تحتوي على دقيق سوسة الموز بأنواع مختلفة والمقارنة (CF0). استعمل تصميم العشوائي الكامل. أظهرت النتائج أن تركيبة الأعلاف الكاملة المحتوية على دقيق سنام الموز باتو (CF2) و Kapok (CF3) أنتجت أفضل استجابة إنتاجية وأداء لماعز Kacang. مقارنة CF0؛ CF1؛ CF4 وCF5.

كلمات مفتاحية: كربوهيدرات، استخدام طحين الموز، كاكان ماعز

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INTRODUCTION

The problem of the difficulty of forage is one of the main inhibiting factors in the process of breeding ruminants and increasing meat production, moreover the intensive management of ruminant livestock business requires forage as a staple feed which must be continuously available, thus a large area is required for forage planting. while the land has been increasingly pressed or reduced due to the conversion of land used for residential housing development, industrial area expansion and urban development, one solution is to find new sources of feed raw materials by optimizing the use of plantation crop waste, food and horticulture. which has the potential for both quantitative and qualitative aspects. Based on these problems, we must optimize the search for raw materials for new feed sources, both raw materials for by-products from food crop and horticultural waste and agro-industrial waste. Banana plants in Indonesia are the easiest plants to grow and reproduce so that they are spread throughout the archipelago. Banana weevil is part of banana plant stem that is below the soil surface (tuber). The chemical composition of banana weevil consists of: chemical composition of various types of banana plants, namely: Ambon banana weevil flour, dry material 89.20%; protein 1.81%; crude fat 1.57%; Crude fiber 21.27; carbohydrates 86.72% and BETN 65.43%. Kapok banana hump flour, namely dry ingredients 91, 56%; protein 1.72%; crude fat 1.15%; Crude fiber 7.98%; carbohydrates 88.16% and BETN 88.86%. Stone banana hump flour, namely 92.64% dry matter; protein 1.71%; 1.5% crude fat; Crude fiber 7.85%; carbohydrates 89.75% and BETN 81.90%. Milk banana hump flour, namely 88.94% dry ingredients; protein 1.75%; crude fat 1.92%; Crude fiber 14.52%; carbohydrates 88.16% and BETN 73.4%. Plantain weevil flour, namely 80.70% dry matter; protein 1.44%; crude fat 1.23%; Crude fiber 16.67%; carbohydrates 81.38% and BETN 64.71%. (2). Based on the nutritional potential of these raw materials, banana weevils can be used as a source of energy for ruminants, feed ingredients as an energy source are feed ingredients whose crude protein content is less than 20%, crude fiber is less than 18% (31). The process of preparing feed through processing technology into a complete feed form, through a practical and simple technological process, banana weevils can be used as one of the raw materials for a complete feed constituent component, complete feed is the presentation of feed with a system of mixing several components of feed ingredients (forage and raw materials. others in the form of concentrates) are jointly made in the form of pellets with the aim of increasing palatability and avoiding selection by livestock. Complete feed using local raw materials / agricultural waste in the form of banana weevils has the advantage that the ingredients are easy to obtain, sufficiently available, can reduce production costs and nutrients can be determined according to the needs of the kacang goats.

MATERIALS AND METHODS

The materials studied in this study were six complete types of feed. Complete feed containing weevil flour from 5 banana plant varieties. Complete feed is prepared with a complete feed composition. The cattle used were 18 male bean goats, mean initial body weight, 15.42 ± 1.98 kg (CV: 13.73%) aged 10-15 months. Livestock are given complete feed containing banana weevil flour for 60 days. The cage measures 12 mx 6m, the construction has a floor platform as high as 140 cm, the enclosure is 1 x 1 m in size with a height of 130 cm, equipped with a place to eat, a place to drink. The tools used consisted of: MCS brand digital mounts with a capacity of 20/50 kg x 20 g / 50 g, Acis Digital Scales, AW-30X, Capacity 30Kg, Accuracy of 2g. The treatment in the form of 6 complete types of feed with different formulations, consisting of CF0, CF1, CF2, CF3, CF4 and CF5 containing banana weevil flour of different varieties and control treatment (CF0), are presented in Table 1. Each treatment was repeated 3 times, so that in total there are 18 experimental units.

Table 1. Ingredients for the complete feed and nutritional composition of the experimental treatment

Feed Ingredients	Treatment (kg)					
	CF_0	CF_1	CF_2	CF_3	CF_4	CF_5
King Grass Flour	70	30	30	30	30	30
Banana Weevil Flour	-	40	40	40	40	40
Fine bran	6,4	6,4	6,4	6,4	6,4	6,4
Coconut pulp	4	4	4	4	4	4
Tofu Dregs	11	11	11	11	11	11
Lamtoro Leaf Flour	3	3	3	3	3	3
Brown sugar	1	1	1	1	1	1
Fish flour	1	1	1	1	1	1
Cassava flour	3	3	3	3	3	3
Sodium Sulfate	0,3	0,3	0,3	0,3	0,3	0,3
Mineral	0,3	0,3	0,3	0,3	0,3	0,3
Sodium Propionate	0,3	0,3	0,3	0,3	0,3	0,3
TOTAL	100	100	100	100	100	100
Nutrient Composition						
Dry Material%	89,20	88,22	88,76	88,05	88,09	87,57
Crude protein %	10,79	10,36	10,17	10,13	10,26	10,95
Crude Fat%	2,60	2,74	3,75	3,03	4,44	3,43
Crude Fiber%	28,71	26,54	24,36	23,75	25,33	25,24
Carbohydrate%	64,12	70,10	72,21	73,74	70,30	71,25
Energy Kcal / kg	1257	1731	1836	2121	1736	1751
Ca %	3,62	2,9	3,05	2,82	1,64	1,95
Phosphor %	0,21	0,27	0,28	0,29	0,23	0,22
BETN %	35,41	43,56	47,85	49,99	44,97	46,01
TDN %	50,69	51,57	53,77	53,63	54,39	53,16
NDF %	67,23	54,10	53,02	52,67	55,03	53,21
ADF %	38,87	43,35	45,12	48,72	42,27	43,02

Information
The value of TDN% and carbohydrates is calculated according to Sutardi, (2001)
Nutrient composition in the complete experimental feed from proximate analysis
CF0 = Control, CF1 = contains Ambon banana weevil flour, CF2 = contains
Kepok banana weevil flour, CF3 = contains Batu banana weevil flour
CF4 = contains weevil flour, pisag milk and CF5 = contains weevil flour
Plantain

Procedure for collecting rumen fluid

The goat whose rumen fluid is to be taken, is laid on a higher place, from the collecting glass and the suction pump machine, so that gravity can help the smooth flow of the rumen fluid into the container, the equipment is prepared in such a way, 1 piece of hose is connected to the suction device at one end and the other end connected to the capillary in the holding cup, 1 piece of the tube again at the other end is connected to the second capillary in the container and the other end connected with an elastic rubber hose is inserted into the rumen through the mouth of the goat, one person is in charge of holding the goat's leg the front and body of the goat so that it does not shift when the rumen fluid is taken, one person is in charge of inserting the tube into the goat's rumen The head of the goat is held and then positioned upward so that the mouth and throat are straight. The elastic hose is slowly rotated into the rumen, after the hose has entered the rumen, one person who is in charge of the vacuum operator, presses the on / off button of the suction pump and the rumen fluid will then enter the container. The rumen fluid was sucked at 7 wit, using a vacuum pump, then the pH of the rumen fluid was measured using a digital pH meter, then each 50 ml rumen fluid was put into a 100 ml bottle, 1 drop of H2SO4 was dropped. cover and added with duct tape until it is tight. After all the samples were collected, they were put into a 3.5 liter vaccine flask, given an ice cube

Data collection techniques

Dry matter digestibility was measured using the Tilley and Terry method as performed by Goering and Van Soest, (10). Preparation of buffer solution: 4 g bicarbonate and 35 g Na bicarbonate dissolved in 1000 ml distilled water, making macro minerals: 5.70 g Na H2

PO4 anhydrous 6.20 g KH2 PO4 anhydrous, 0.60 g MgSO4. 7H2 is dissolved in 1000 ml of distilled water. Micro-mineral extraction: 13.20 g Ca CL2. 2H2 O; 10 G MnCL2. 4H2 O; 1g Co CL2. 6 H2 O and 8 g Fe CL3 6H2 O were dissolved in 100 ml distilled water. The media solution was prepared by mixing 800 ml bicarbonate buffer, 800 ml macrominral, 0.40 ml microminral, 8 g tryptycase and 1,600 ml distilled water. The reducing solution was prepared by mixing 1 g of Na2S. 9H2O, 1 g cysteine HCL, 6.40 ml 40% NaOH and 152 ml distilled water. Determination of the digestibility of dry matter and organic matter as follows: rumen fluid shaken at low speed 1000 rpm, 10 ml of homogeneous rumen fluid is poured into 100 ml erlenmeyer containing 0.50 g of rasum, 40 ml of medium, 2 ml of reducing solution. The erlenmeyer tube containing the material is stored in a shaking water bath and continuously fed with CO2 gas. The liquid is incubated for 6 hours. Erlenmeyer is removed and removed from the water bath and 1-2 drops of tluen are added to stop fermentation. Erlenmenyer was stored in the refrigerator until analyzed. 1 ml of the incubated pipette was put into a centrifuge tube and added 0.03 g of sulfosalicylic acid then centrifuged for 10 minutes at a speed of 3,000 rpm. The supernatant was removed and the precipitate was added with 0.2% pepsin solution under acidic conditions. Incubation in an aerobic atmosphere for 48 hours, during which time it was shaken on each tube every 6 hours. After the incubation is complete, the residue is taken by filtering through Whatman filter paper No. 41. Then the residue is dried in an oven with a temperature of 1050C for 12 hours (to determine the digestibility coefficient of dry matter) to measure the digestibility coefficient of organic matter, by ashing in a furnace at 6000C for 6 hours. Complete feed consumption is calculated from the total feed given during the study minus the total leftover feed during the study. The dry matter consumption of feed is determined by the total consumption multiplied by the dry matter content of the feed The dry matter digestibility is calculated by the total dry matter consumption minus the total dry matter in feces divided by the dry matter consumption, multiplied by 100%. Feed energy consumption is determined by the total dry matter of the feed consumed multiplied by the energy content in the feed. The digestibility of the total energy consumption minus the energy in feces divided by the energy consumption multiply by 100% Blood glucose was measured using a digital instrument (Accu check), by taking 1 cc of blood from the jugular vein using a sterile disposable syringe, then dropping 1 drop on the part that has been installed, blood glucose levels can be read directly on the monitor screen. Increase in body weight, the final body weight is reduced by the initial weight. Daily body weight gain, body weight gain during the study divided by the length of time of the study.

Research variables

Research variables include: dry matter consumption, energy consumption. energy digestibility, blood glucose using a tool (Accu Chek) and daily body weight gain.

Statistical analysis

The study was conducted using a 6 x 3 completely randomized design, with treatment in the form of 6 types of complete feed with different formulations, consisting of CF0, CF1, CF2, CF3, CF4 and CF5. Each treatment in this study was repeated 3 times, so that there were a total of 18 research units

Data analysis

The data obtained from all the variables of this study were analyzed using analysis of variance following the instructions of Steel and Torrie (33), the F test was carried out at the 5% and 1% significance levels.

RESULTS AND DISCUSSION

Consume dry ingredients

The results of the analysis of the various treatments had a very significant effect ($P < 0.01$) on the consumption of dry matter based on the Duncan test on the consumption of dry matter between complete feed treatments studied by CF2 (5.70%), CF3 (5.20%) was significantly different ($P < 0.01$) compared to CF0 (3.37%), CF1 (4.10%); CF4 (4.13%) and CF5 (4.24%), while the dry matter consumption was CF1; CF2; CF4 and CF5 were not significantly different ($P > 0.05$), the dry matter consumption of the goat nuts treated with CF2 and CF3 resulted in higher dry matter consumption when compared to treatment CF0; CF1; CF4 and CF5. This is due to the complete chemical composition of the feed, especially in relation to the high NDF content at CF0. as McDonald *et al*., (19) stated that the main factors that can influence feed consumption in ruminants are the NDF content of feed and the texture properties of feed raw materials. In relation to the texture of feed raw materials, when it is related to the physical properties of banana weevil flour, which has a brittle texture and material composition of 40% with forage 30% of the total feed, this is indicated to cause the flow rate of feed into the intestine is relatively faster. , compared to control diets containing forage (fiber) 70%, the flow rate of feed into the intestine is relatively slow.The findings of consumption and consumption of goat dry matter Nuts from complete feed containing banana weevil flour resulted in higher dry matter consumption than control rations, the findings were supported by the physical properties of complete feed components containing 40% of Batu banana weevil flour with brittle flour particles, and low crude fiber and the proportion of banana weevil flour that reaches 40% will certainly affect the total crude fiber content of the complete feed lower than CF0 (the composition of crude fiber content of treatment CF0 and CF2 respectively 28.71%; 23.75%) , so that it is possible to increase the consumption of dry matter High-fiber feed will be digested for a long time in the digestive tract to obtain digestible substances, too much indigestible material will cause feed intake to decrease (19). Toharmat *et al*., (25) stated that the physical characteristics, particle size and type of cell wall of the ration building materials will affect the feed intake. Thus the main factors causing the higher consumption of feed and dry matter in CF2 and CF3 were related to the low crude fiber content of the complete feed and the physical properties of banana weevil flour which contributed 40% of the total feed. Batu and Kepok banana weevils are included in the tubers that contain quite high carbohydrates, namely 89.74% which is related to the BETN content of complete feeds with CF2 and CF3 treatments respectively: 50.87%; 48.20%, higher than CF0; CF1; CF4 and CF5. In order: 35.41%; 43.56%; 44.97% and 46.01%. Feed that has high fiber will affect the composition of the complete NDF and ADF feed as a whole, CF3 NDF of 52.67%; ADF of 48.72%, and CF0 of NDF of 67.23%; ADF 38.87%, the crude fiber content contained in a feed ingredient is a component that is insoluble in a neutral detergent solution and exists quantitatively in the form of NDF which is mostly polysaccharide, hemicellulose, cellulose and lignin. The size of the feed NDF and ADF content is one of the factors causing the low ability of livestock to consume and digest feed (18), this is evident from the results of research, that the CF2 and CF3 treatments resulted in higher dry matter digestibility than CF0 (control). and CF1 treatment; CF4 and CF5.

Table 2. Average Feed Consumption, Dry Material Consumption, Dry Matter Digestibility, Energy Consumption, Energy Digestibility, Blood Glucose and Body Weight Gain in Kacang Goats

Variable	Treatment					
	CF_0	CF_1	CF_2	CF_3	CF_4	CF_5
DMc (%)	$3{,}37 \pm 0.12^{A}$	$4{,}10 \pm 0.42^{A}$	$5{,}70 \pm 0.25^{B}$	$5{,}20 \pm 0.38^{B}$	$4{,}13 \pm 0.02^{A}$	$4{,}24 \pm 0.06^{A}$
DMd (%)	$48{,}59 \pm 0.80^{A}$	$67{,}60 \pm 1.29^{B}$	$79{,}95 \pm 3.98^{C}$	$72{,}90 \pm 1.64^{C}$	$60{,}70 \pm 1.37^{D}$	$61{,}60 \pm 0.95^{D}$
E c (MJ / head / day)	$2{,}33 \pm 0.24^{A}$	$3{,}10 \pm 0.32^{A}$	$6{,}76 \pm 0.28^{B}$	$6{,}38 \pm 0.25^{B}$	$3{,}25 \pm 0.25^{C}$	$3{,}40 \pm 0.21^{C}$
Ed (%)	$30{,}28 \pm 1.1^{A}$	$52{,}20 \pm 0.70^{B}$	$79{,}89 \pm 0.5^{C}$	$77{,}57 \pm 1.0^{C}$	$68{,}20 \pm 1.0^{D}$	$69{,}20 \pm 0.9^{D}$
Bg (mg / dl)	40 ± 2^{a}	45 ± 0.3^{a}	$52{,}00 \pm 0.1^{B}$	50 ± 0.1^{B}	43 ± 0.2^{a}	$42 \pm 0{,}1^{a}$
Bwg: / (g / head / day)	$49{,}58 \pm 0.93^{a}$	$60{,}24 \pm 0.62^{b}$	$104{,}11 \pm 2.81^{C}$	$102{,}07 \pm 2.35^{C}$	$62{,}12 \pm 1.12^{b}$	67 ± 1.83^{b}

Note: different lowercase letters on the same row indicate significantly different (P <0.05);
Different capital letters on the same line indicate very significant differences (P <0.01)
DMd : DM digestibility (%)
Ec : Energy consumption (MJ / head / day)
Ed : Energy digestibility (%)
Bg : Blood glucose (mg / dl)
Bw g : body weigt gain in BPBBH / (g / head / day)

Dry matter digestibility

The results of the analysis of various treatments had a very significant effect (P <0.01) on the digestibility of dry matter based on the Duncan test on the digestibility of dry matter between complete feed treatments examined by CF2 (79.95%), CF3 (72.90%) was significantly higher (P <0.01) compared to CF0 (48.59%), CF1 (67.60%); CF4 (60.70%) and CF5 (61.60%), while the dry matter digestibility of CF4 treatment with CF5 and CF2 and CF3 was not significantly different (P> 0.05). This is due to the fact that CF2 and CF3 contain simple, easy-to-ferment carbohydrates (sugar, starch), which are then fermented into Volatile fatty acids (VFA). If confirmed by the reports of several previous researchers: Hartadi *et al*., (13) stated that the dry matter digestibility range of goats was 393.1 g / head / day; Sanon *et al.*, (21) 387-492 g / head / day; Sauve *et al*., (28) amounting to 448-450 g / head / day. The findings of the average dry matter digestibility obtained in this study are presented in Table 3, the average dry matter digestibility of the complete feed containing Batu banana hump flour is higher than that obtained by previous researchers, this is possible because the dry matter digestibility is higher, due to the fermentation process. can run better, is a manifestation of CF2's better NDF and ADF content, and lower crude fiber than CF0, and CF1 treatment; CF3; CF4 and CF5. As stated by Chunjula *et al*., (5) stated that the NDF content of feed greater than 50% will reduce the level of consumption and digestibility of dry matter. The structure of plant cell walls (NDF) with lignin content varies according to plant species and the physiological age determines the digestibility by rumen microbes. Parakkasi (1999) stated that forage plants that are too old the lignin content increases, which can cause the digestibility of cellulose to decrease from the cellulose fraction which has the potential to be digested to be lower. Deboevaer *at al.*, (2019) stated that structural components such as cellulose, cell wall lignin (NDF and ADF) negatively affect the nutrient digestibility of the ration, while soluble carbohydrates (starch) can increase nutrient digestibility; Lanzas *et al*., (17) stated that high starch foods such as tubers / seeds and concentrates are classified as non-structural carbohydrates (glucose, fructose, sucrose, polysaccharides and starch).

Energy Consumption: The results of the analysis of the various treatments had a very significant effect (P <0.01) on energy consumption based on the Duncan test on the digestibility of dry matter between complete feed treatments studied by CF2 (6.76 MJ / head / day), CF3 (6.38 MJ / head). / day) was significantly higher (P <0.01) compared to CF0 (2.33 MJ / head / day), CF1 (3.10 MJ / head / day); CF4 (3.25 MJ / head / day and CF5 (3.40 Mj / head / day), while the dry matter digestibility of CF4 treatment with CF5 and CF2 and CF3 was not significantly different (P> 0.05). higher than control, the average energy consumption at CF0 was (2.33 MJ / head / day) while CF2 was (6.76 MJ / head / day). Based on the resulting energy consumption data, if it is confirmed with the energy requirements for goats, that the CF0 treatment is below the standard energy requirement, while the CF2 treatment is in the range of energy requirements based on Kearl's guidelines. (18), thus it can be stated that CF2 treatment; CF3 which contains banana weevil flour of Batu and Kepok varieties can meet the energy needs of Kacang goats, this is possible because the CF2 treatment has a higher energy content than the control, this is also supported by the complete energy digestibility of CF2 of (79.89). %) is also higher than the CF0 of (30, 28%) Consumption and energy digestibility of the goat Kacang produced from CF2 when confirmed by the results of previous research reports that CF2 was higher than that reported by Haque *et al*. (11) consumption ranges from 5.15-6.06 MJ / head / day and digestibility 2.24-3.10 MJ / head / day, while the energy consumption and digestibility of the controls were lower. Energy consumption and digestibility can be stated that a complete feed containing Batu banana weevil flour can play a role in increasing energy consumption and digestibility for Peanut goats, supported by one of the factors, including the carbohydrate content contained in complete feed in the CF3 treatment which is higher than CF0 , sequentially (73.74% vs 64.12%), in line with what Van Soest, (37) stated, that the value of feed digestibility can be a measure of energy availability for livestock, as the data on energy consumption and digestibility of the goat's Bean higher research. Kuswandi *et al*., (15) also stated that energy consumption in livestock can be increased from available feed carbohydrates, which basically aims to meet energy needs for basic life functions, temperature control and production and the formation of body tissues from protein more efficiently with availability. enough energyThe high energy consumption and digestibility at CF2 and CF3 is possible because it contains Batu and Kepok banana weevil flour which is rich in carbohydrate content in the form of starch (starch) which is easy to digest, besides that it also contains feed carbohydrates and energy is higher than CF0, then if proven from the partial VFA production which is the result of carbohydrate fermentation in the rumen, namely the propionate produced from CF2 and CF3 is also higher than CF0 and CF0 treatment; CF1; CF4 and CF5. Flying fatty acids (VFA) are one of the products of carbohydrate fermentation by rumen microbes in addition to other products, VFA is the main energy source for ruminant animal needs, as stated by Van Soest (1994) that VFA is the most important source of metabolic energy for ruminants and a chain source. carbon for rumen microbial sentensis, because VFA is able to supply 55-60% of the energy needed by livestock.Propionic acid is the highest energy contributor compared to acetic and butyric acid as stated by McDonal *et al.,* (19) that propionic acid as an energy source has 2 pathways through the oxidation process 1. Oxidation after conversion to glucose: through the Gluconegenesis Pathway: produced 17 mol ATP / mol propionic acid 2. Direct oxidation of propionic acid yields 18 mol ATP / mol propionic acid. Pathoumalangsy. *et al*., (24) energy produced from butyric acid as an energy source: butyrate conversion of β-hydroxybutyrate: 2 moles of ATP are produced. McDonal *et al.,* (2002) stated that acetic acid as an energy source of acetate + CoA + ATP CH3-CO-CoA (Acetyl CoA) + AMP + P-P + H2 produces 10 mol ATP / mol acetate. Based on the findings of energy consumption and digestibility data resulting from the CF2 and CF3 treatments, it can be stated that the Batu and Kepok banana varieties are rich in starch and their composition of 40% of the total complete feed has indeed been shown to play a role in increasing energy consumption and digestibility for goats. Peanuts, when compared to the control feed, showed that a complete diet containing Batu banana hump flour had a better positive impact in increasing the amount of fish

Blood glucose

The results of the analysis of the various treatments had a very significant effect (P <0.01) on the blood glucose concentration of the Kacang goats, based on the Duncan test on the blood glucose content of the Peanut goat which was given complete feed as studied as CF3 (50.00 mg / dl), CF2 (52 00 mg / dl) was significantly higher (P <0.01) compared to CF0 (40.00 mg / dl), CF1 (45.00 mg / dl), complete feed CF3 (50.00 mg / dl), with CF4 (43.00 mg / dl) and CF5 (42.00 mg / dl) resulted in significantly different blood glucose (P <0.05), while CF3 with CF2 and CF1 was not different. Between CF2 and CF1, CF4 and CF5 also not significantly different (P> 0.05). The average complete blood glucose content of CF1 (45.00 mg / dl) with CF4 (43.00 mg / dl) with CF5 (42.00 mg / dl), CF0, CF5 with CF0 was not significantly different (P> 0 , 05). The average blood glucose in CF0 treatment (40 mg / dl; CF2 52 mg / dl, the blood glucose produced by CF2 treatment was higher than CF0, indicating that Batu banana hump flour can provide better energy than CF0. Glucose in ruminants is not only a source). energy after VFA is also important in the maintenance of body cells, especially blood and muscle (23). Sources of blood glucose include carbohydrates contained in feed (12). Glucose is the final and main product of carbohydrate digestion. circulating with the blood (Anggorodi, 1995). Carbohydrates derived from feed will be fermented in the rumen by microorganisms producing flying fatty acids (VFA), especially propionic acid which functions as a blood glucose precursor (Martin *et al.,* 1983), this is confirmed by the results of research, that a complete feed which is containing 40% hump flour of banana varieties of Batu banana plant can increase the concentration of propionic acid higher than the control. Propionic acid which functions as a precursor of blood glucose, which is related to the carbohydrate fermentation process that produces VFA as the main energy source for ruminants (12), also stated by Farandson (1992) that the results of carbohydrate digestion in ruminants in the rumen reticulum are volatile fatty acids (VFA), especially acetic, propionic and butyric acids which are absorbed before they reach the intestines. Volatile fatty acids are absorbed into the blood consciousness into the liver, in the liver VFA is converted into glucose. The findings of the blood glucose content produced in the complete feed treatment containing various types of banana weevil flour were still in the range of normal blood glucose levels for goats, as stated by Frank *et al*., (9) that normal blood glucose levels in ruminants lower than non-ruminant animals, namely 40-60 mg / dl. Lanzas *et al*., (17) also stated that normal blood glucose levels in sheep / goats are 40 mg / dl in cows 60 mg / dl. Based on the findings of blood glucose content, it can be concluded that the higher blood glucose content in cattle treated with CF2 feed carbohydrates can be better digested and utilized than CF0. and CF1 treatment; CF3; CF4 and CF5 Blood glucose from CF2 treatment containing Batu banana weevil flour produced higher blood glucose than CF0 treatment indicating that CF2 treatment could provide a better energy source than CF0, or in other words CF2 (containing Batu banana weevil flour with carbohydrate content of 73, 74%) can provide a source of energy (in the form of) glucose better, as Harper et al., (12) stated that blood glucose comes from feed carbohydrates. Frank *et al*., (9) also stated that the source of blood glucose comes from carbohydrates contained in feed, blood glucose at certain times is determined by the balance between the amount of glucose that enters the blood and the amount of glucose that leaves the blood. This finding of blood glucose content reaffirms that CF2 can be relied upon to meet the energy needs of Kacang goats.

The results of the analysis of the various treatments had a very significant (P <0.01) effect on the growth of live body weight of Kacang goats. The Duncan test on body weight gain between complete feed treatments examined CF2 (104.11 g / head / day), CF3 (102.07 g / head / day) was significantly higher (P <0.01) than CF0 (49.58 g / head / day), CF1 (60.24 g / head / day); CF4 (62.12 g / head / day and CF5 (67.00 g / head / day), while the dry matter digestibility of the CF4 treatment with CF5 and CF2 and CF3 was not significantly different (P> 0.05). CF2 treatment beans were higher than control, the average energy consumption at CF0 was (49.58 g / head / day) while CF2 was (104.11 g / head / day). The findings showed that the CF2 treatment with CF0 was significantly different (P <0.01) on the daily body weight gain of Kacang goats. The average daily body weight gain of CF0 is (49.58 g / ekr / day) while the CF2 treatment is (104.11 g / head / day), this is because CF2 contains Batu banana weevil flour which is rich in easily digested carbohydrates in the form of starch (starch) and has brittle flour particles and a composition of Batu banana hump flour of 40% of the total feed, so that the fermentation process in the rumen runs quickly and can be utilized quickly by Kacang goats, as stated by Hutagalung (2004). consisting of glucose, fructose, sucrose, polysaccharides, then Dabeoa *et al.*, (6) stated that dissolved carbohydrates are digested by rumen microbes 100 times faster than structural carbohydrates. Carbohydrate (starch) is a part of organic matter that plays an important role as a source of energy for livestock, as stated by Anggorodi (1) that energy from feed is very useful for microorganisms in the rumen to digest crude fiber, as stated by McDonald *et al.*, (19) stated that carbohydrates are fermented by microorganisms (bacteria, protozoa and fungi) in the rumen and reticulum to produce VFA (volatile fatty acid) which is the main energy source for ruminants. The increase in live body weight can be a reflection of the quality of the feed given, in fact from the results obtained that complete feeding containing banana weevil flour which is rich in digestible carbohydrates can increase the body weight gain of Peanut goats, this is a manifestation of the level of consumption. dry ingredients of kacang goat from treatment CF0 of 631.90 or (4.37% of body weight) and CF2 of 751.95 g / head / day or (5, 20% of body weight), and supported by very high dry matter digestibility of CF2. real (P <0.01) was higher than CF0 (68.59%), while CF2 was (72.90%). Dry matter consumption and dry matter digestibility CF2; CF3 is higher than CF0, compared to CF0 treatment; CF1; CF4 and CF5, indicated that the nutrients that were entered and absorbed by the Kacang goats from CF2 were greater than CF0, as stated Setiadi. (31) feed is one of the important factors in supporting the growth of livestock, the feed given must contain sufficient protein, carbohydrates, vitamins, minerals, non-toxic, preferred by livestock and easy to digest. The findings data on body weight gain of Kacang goats produced were confirmed by the results obtained by several previous researchers, Simon *et al*., (36) that the daily body weight gain of female Kacang goats was 54-64 g / head / day, with concentrate feeding Rantan et al. , (26) reported that with complete feeding of passion fruit skins on Kacang goats, body weight gain was 60-97 g / head / day; Rudiah (24) male Kacang goat body weight gain 82.14-98.21 g / head / day; Simanihuruk. (29) complete feeding of Peanut goats is 80.86-106 g / head; and Suparjo *et al*., (32) giving complete feed of fermented cocoa pods to goats resulted in weight gain of 58.95- 101 g / head / day. The findings of the body weight gain of the goat Peanuts resulting from the CF2 treatment were higher, when compared to the reports of several previous researchers, it could be possible by providing complete feed containing stone banana weevils which are rich in carbohydrate content in the form of starch which is easily digested and quickly utilized by livestock kacang goats.

Conclusion

The results of the research that the complete feed formulation containing Batu banana hump flour (CF2) and Kepok (CF3) produced the best productivity of Kacang goats. compared to CF0 treatment; CF1; CF4 and CF5.

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