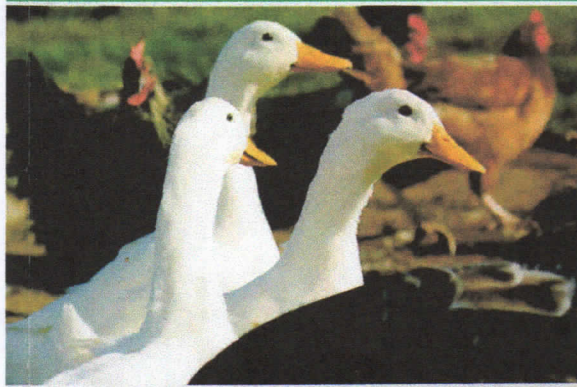


PROCEEDING



international seminar

STRATEGY TO MANAGE BIO-ECO-HEALTH SYSTEM FOR STABILIZING ANIMAL HEALTH & PRODUCTIVITY TO SUPPORT PUBLIC HEALTH



Surabaya-Indonesia, 19-20 June 2012
JW Marriott Hotel Surabaya

EDITORS:

Michael P. Ward (Australia)

Faouzi Kechrid (Africa)

Montip Gettayacamin (Thailand)

Fedik Abdul Rantam (Indonesia)

Suzanita Utama (Indonesia)

FACULTY OF VETERINARY MEDICINE - UNIVERSITAS AIRLANGGA
I-MHERE SUB-COMPONENT B.2.C PERFORMANCE BASED CONTRACT

MILIK PERPUSTAKAAN
FAKULTAS KEDOKTERAN HEWAN
UNIVERSITAS AIRLANGGA – SURABAYA

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Phone. +62 31 5992246, 5992247 Fax. +62 31 5992248

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I. Faouzi Kechrid

II. Montip Gettayacamin

III. Fedik Abdul Rantam

IV. Suzanita Utama

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Dr. Faouzi Kechrid (Africa)

Montip Gettayacamin, DVM., DACLAM (Thailand)

Prof. Dr. Fedik Abdul Rantam, DVM. (Indonesia)

Suzanita Utama, M.Phil, DVM. (Indonesia)

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THE EFFECT OF COMPLETE FEED ON THE HEMICELLULOSES DIGESTIBILITY AND DIGESTIBLE VALUES IN DAIRY CATTLE

Yuliati T., Romziah S.,¹ Nurhajati T.,¹ Wahjuni R.S,² Hidanah S.,¹ Mirni L.,¹ Herman S¹

¹)Department of Animal Husbandry, ²)Department of Basic Medical Veterinary
Faculty of Veterinary Medicine, Universitas Airlangga
E-mail: titin.yuliati20@gmail.com

ABSTRACT

The aim of this research was to determine the effect of complete feed on the hemicelluloses digestibility and digestible values in dairy cattle. The research was conducted on ten female Friesian Holstein dairy cattle five until twelve years old and two until six month lactation period. Research design was completely randomized design with five treatments and seven replications. Five treatment groups were P0 as a control feed, P1, P2, P3 and P4 were complete feed which have different composition. The results of this research showed that various complete feed had different effects on the hemicelluloses digestibility and digestible value. The result of hemicelluloses digestibility value showed that P2 had a high hemicelluloses digestibility value and P1 had a low hemicelluloses digestibility value. The result of hemicelluloses digestible value also showed that P2 had a high hemicelluloses digestible value and P1 had a low hemicelluloses digestible value.

Keywords: complete feed, hemicelluloses digestibility, hemicelluloses digestible, dairy cattle

INTRODUCTION

Generally, the farmers do not give specified amount of feed to their livestock, so it is not enough or the rest of feed is wasted. Therefore we need a way to optimize the use of feed given to cattle. Optimization and efficiency can be made if the amount of known nutrient content, consumption, and digestibility of the feed materials (Tillman *et al*, 1992).

According to Anggorodi (1990), the measurements of digestibility is an attempt to determine the amount of nutrient from a material that is degraded and absorbed in the digestive tract. Percentages of nutrient digestibility is absorbed in the digestive tract and the result will be known by looking at the difference between the amount of nutrients consumed and the amount of nutrients release in the feces.

One of the substances that need to be considered when calculating the digestibility of a feed is to look hemicelluloses digestibility. Hemicellulose is one of the substances found in plant cell walls. Hemicelluloses are containing carbohydrate. Since the hemicelluloses can constitute a considerable portion of forage carbohydrate, their use as energy source of animal ruminant (Coen and Dehority, 1970).

The improvement of livestock farming productivity, either dairy cattle, beef cattle, goat or sheep, can be attempted by taking the benefit of technological advances in field of cattle feed by creating the formula of complete feed (Romziah and Retno, 2008).

Based on this, the author tried to create an alternative in the manufacture of feed ration in the form of complete feed. In this case, the composition formula cannot be mentioned because patent of project owner.

The aims of this research were to find out the hemicelluloses digestibility value in various complete feeds for dairy cattle.

IDS

l on ten female Friesian Holstein dairy cattle in five until twelve years lactation period. Research design was completely randomized design replications. Five treatment groups were P0 as a control feed, P1, P2, which have different composition.

is for 1 week and treatment of each complete feed was for 9 days. ned from each group of treatment was 100 g/cow/day. Analysis of in this research used Van Soest Method.

ditional values

Treatment	Digestibility (%)	Ash (%)	Crude Fiber (%)	Protein (%)	Hemicelluloses (%)
P0	80.91	15,53	22.92	15.14	18.59
P1	91.90	15.02	28.69	19.28	19.61
P2	91.95	15,37	26.44	14.44	27.16
P3	91.86	12,57	22	21.35	23.69
P4	91.83	14,61	26.95	19,26	22.55

(Source: Romziah, 2010)

The data was analyzed with *Analysis of Variant* (ANOVA) method, and for different mean between the treatments were tested by Duncan's multiple range tests. The software used to analyze the data is windows Statistical Product and Solution Service 20 (SPSS 20).

RESULT AND DISCUSSION

Data of hemicelluloses digestibility and its digestible values of complete feed were showed on table 2. Research showed that feeding complete feed to dairy cattle caused significant differences of hemicelluloses digestibility and its digestible values ($p < 0.05$).

Table 2. Hemicelluloses Digestibility and Digestible Value of Complete Feed by Dairy Cattle on each treatment (%)

Treatment	Hemicellulose Digestibility (%)	(Arcsin \sqrt{y}) ^o	Hemicelluloses Digestible (kg)
P0	53.18 ± 1.22	46.83 ^b	1.37 ^{cd} ± 0.34
P1	45.70 ± 3.74	42.36 ^c	1.27 ^d ± 0.13
P2	66.98 ± 1.66	55.01 ^a	2.63 ^a ± 0.16
P3	60.30 ± 2.20	51.03 ^{ab}	1.96 ^b ± 0.17
P4	58.46 ± 2.30	49.93 ^b	1.76 ^{bc} ± 0.16

Digestibility of feed ingredients can be influenced by several factors, such as ration composition, physical form, material feed, the high content of crude fiber, the physical form of food, and air temperature. High temperatures can cause a decrease in appetite and because animals drink more, so as to reduce the amount of feed consumed (Hatmaya, 2008).

The highest hemicelluloses digestibility present in the P2 treatment by 66.98 %. This is because the rumen microbes can utilize hemicelluloses as an energy source on food degradation in the rumen (Church, 1988).

The lowest hemicelluloses digestibility was in the treatment P1 (45.70%). This is because the lignin bond, form a bond that is difficult to digest lignohemicelluloses (Sutardi, 1983). As a result the ability of rumen microbes in utilizing hemicelluloses as an energy source is low compare to the other treatment.



The highest hemicelluloses digestibility was in the treatment P2 (2.63 kg). High hemicelluloses and cellulose content in feed for ruminant is not problematic because ruminant can utilize hemicelluloses and cellulose as an energy source, provide it is not in crystallized form (Harfiah, 2009).

The lowest hemicelluloses digestible values was in the treatment P1 (1.27 kg). According to Campbell and Lasley (1985) digestibility is affected by the ability to digest animal feed ingredients, nutritional adequacy to meet the basic needs of live growth, and function of the body, and as the type of feed materials that is consumed.

CONCLUSION

From results of the research, it could be concluded that giving several complete feeds showed significant differences on hemicelluloses digestibility and digestible value in dairy cattle. The highest hemicelluloses digestibility and digestible value was obtained in treatment P2 and the lowest in P1.

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