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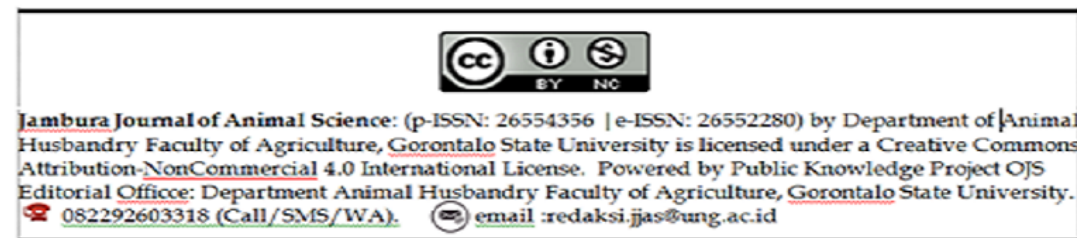
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Kandungan Acid Detergent Fiber Dan Neutral detergent Fiber Jerami Jagung fermentasi Dengan Menggunakan Jamur Trichoderma Viride Dengan Lama Inkubasi Berbeda

Natalia Usman, ellen salah

Abstract

The research was aimed at investigating acid detergent fibre neutral detergent Fiber content in corn straw fermented using Trichoderma Viride in different Incubation Time. It applied completely Randomized Design consisting Of 4 treatments and 4 repetitions, hence, it resulted in 16 units of an experiment. The Treatments consisted of corn straw without inoculation (control), 7% corn straw Fermented with Trichoderma viride in 1 week incubation time, 7% corn straw Fermented with Trichoderma Viride in 2 weeks incubation time, and 7% corn straw fermented with Trichoderma Viride in 3 weeks incubation time.

Analysis of variance result shows that corn straw fermented using Trichoderma Viride in different Incubation Time gave significant influence toward ADF content ($p < 0,05$). Besides, corn straw fermented using Trichoderma Viride in different incubation Time gave significant influence toward NDF content ($p < 0,05$).

Keywords

Acid Content, Corn Straw, Detergent Fiber

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Kandungan Acid Detergent Fiber Dan Neutral detergent Fiber Jerami Jagung fermentasi Dengan Menggunakan Jamur Trichoderma Viride Dengan Lama Inkubasi Berbeda

Natalia Usman¹⁾, Ellen J. Saleh²⁾, Musrifah Nusi²⁾

1. Animal husbandry department alumni, Faculty of agriculture, Gorontalo state university

2. Animal husbandry departmen, Faculty of agriculture, Gorontalo state university

natalia_usman@yahoo.com, ellen.saleh@ung.ac.id, musrifah.nusi@ung.ac.id.

ABSTRACT

The research was aimed at investigating acid detergent fibre neutral detergent Fiber content in corn straw fermented using Trichoderma Viride in different Incubation Time. It applied completely Randomized Design consisting of 4 treatments and 4 repetitions, hence, it resulted in 16 units of an experiment. The Treatments consisted of corn straw without inoculation (control), 7% corn straw Fermented with Trichoderma viride in 1 week incubation time, 7% corn straw Fermented with Trichoderma Viride in 2 weeks incubation time, and 7% corn straw fermented with Trichoderma Viride in 3 weeks incubation time.

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Keywords: Acid Content, Corn Straw, Detergent Fiber.

PENDAHULUAN

Hijauan merupakan pakan utama ternak ruminansia yang harus tersedia sepanjang tahun. Untuk itu perlu dikaji berbagai kendala penyediaan sumber hijauan pakan yang makin terbatas, seperti pemanfaatan lahan yang diprioritaskan bagi tanaman pangan, perkebunan, dan peruntukan lainnya. Guna mengantisipasi fluktuasi produk hijauan, maka perlu memperhatikan kontinuitas ketersediaan bahan pakan, agar dapat disesuaikan dengan kondisi musim. Untuk mengantisipasi kurangnya hijauan pada musim kemarau, perlu diadakan upaya pengumpulan dan pengawetan jerami jagung pada saat musim tanam jagung yang melimpah pada musim penghujan. Pengawetan jerami jagung dalam bentuk fermentasi merupakan salah satu alternatif untuk memperpanjang umur kegunaannya dalam keadaan nilai gizi yang tidak banyak mengalami degradasi.

Jeraminya juga dapat dimanfaatkan sebagai pakan. Namun, jerami jagung dikategorikan sebagai limbah pertanian. Jerami jagung memiliki

kekurangan yaitu kandungan nutrisi dan daya cernanya yang rendah. Hal ini disebabkan oleh karena dinding selnya sudah mengalami lignifikasi lanjutan sehingga selulosa dan hemiselulosa terikat oleh lignin. Oleh karena itu masih perlu ditambahkan bahan-bahan pakan lain yang saling mengisi dan menguntungkan berkurangnya unsur-unsur yang dibutuhkan oleh ternak (Shoalihin, 2015).

Mengestimasi kandungan serat dalam pakan dan fraksi - fraksinya metode yang digunakan adalah metode Van Soest *et al* (1991). Metode detergen terdiri dari 2 bagian yaitu : Sistem *netral* untuk mengukur total serat atau serat yang tidak larut dalam *Neutral Detergent Fiber* (NDF) dan sistem detergen asam digunakan untuk mengisolasi selulosa yang tidak larut dan lignin serta beberapa komponen yang terikat dengan keduanya (ADF).

Acid Detergen Fiber (ADF) merupakan zat makanan yang tidak larut dalam detergen asam yang terdiri dari selulosa, lignin dan silika (Van Soest, 2006). Komponen ADF yang mudah dicerna adalah selulosa, sedangkan lignin sulit

dicerna karena memiliki ikatan rangkap, jika kandungan lignin dalam bahan pakan tinggi maka koefisien cerna pakan tersebut menjadi rendah (Sutardi dkk., 1980). *Neutral Detergent Fiber* (NDF) merupakan zat makanan yang tidak larut dalam detergent netral dan NDF bagian terbesar dari dinding sel tanaman. Bahan ini terdiri dari selulosa, hemiselulosa, lignin dan silika serta protein fibrosa (Van Soest, 1982).

METODE PENELITIAN

Penelitian telah dilakukan pada bulan November sampai Desember 2018. di Laboratorium Terpadu pertanian Universitas Negeri Gorontalo dan dianalisis proksimat kandungan ADF dan NDF di Laboratorium Kimia dan makanan ternak Universitas Hasanudin.

Prosedur Penelitian

Sebelum melakukan proses fermentasi terlebih dahulu mengumpulkan jerami jagung. Setelah itu, jerami jagung disimpan di tempat yang teduh agar tidak terkena hujan. Setelah jerami jagung terkumpul, lalu dilakukan pencacahan menggunakan mesin chopper dengan panjang ukuran hasil pencacahan ± 2 cm. Hasil cacahan tersebut, kemudian dicampur secara merata dengan bahan-bahan yang telah disediakan sesuai dengan komposisi atau perlakuan yang telah ditentukan. Setelah semua bahan tercampur secara merata. untuk pengambilan analisis data NDF (*Neutral Detergent Fiber*) dan ADF (*Acid Detergent Fiber*)

Penentuan Kadar Acid Detergent Fiber(ADF)

1. Timbang sampel 0,3 gram (a gram) kemudian masukkan kedalam tabung reaksi 50 ml
2. Tambahkan 40 ml larutan ADF kemudian tutup rapat tabung reaksi tersebut
3. Refluks dalam air mendidih selama 1 jam
4. Saring dengan sintered glass yang

telah diketahui beratnya (b gram) sambil diisap dengan pompa vacum

5. Cuci dengan lebih kurang 100 ml air mendidih sampai busa hilang dan 50 ml alkohol
6. Ovenkan pada suhu 100°C selama 8 jam atau dibiarkan bermalam
7. Dinginkan dalam eksikator lebih kurang ½ jam kemudian timbang (c gram)

Penentuan Neutral Detergent Fiber (NDF)

1. Timbang sampel 0,2 gram (a gram) masukkan kedalam tabung reaksi 50 ml
2. Tambahkan 25 ml larutan NDS, kemudian tutup rapat tabung reaksi tersebut.
3. Refluks dalam air mendidih selama 1 jam.
4. Saring dengan sintered glass yang telah diketahui beratnya (b gram) sambil diisap dengan pompa vacum
5. Cuci dengan lebih kurang 100 ml air mendidih hingga busa hilang
6. Cuci dengan lebih kurang 50 ml alkohol
7. Ovenkan pada suhu 100°C selama 8 jam atau dibiarkan bermalam
8. Dinginkan dalam eksikator lebih kurang ½ jam kemudian timbang (c gram)

Analisis

$$\text{Kadar ADF} = \frac{c-b}{\text{Berat sampel (a)}} \times 100\%$$

$$\text{Kadar NDF} = \frac{c-b}{\text{Berat sampel (a)}} \times 100\%$$

Data yang diperoleh dianalisis dengan *analysis of variants* (ANOVA). Jika terdapat pengaruh nyata diuji lanjut dengan uji Duncan. (Gaspersz, 1995)

HASIL DAN PEMBAHASAN

Berdasarkan hasil penelitian rata-rata kadar Acid Detergent Fiber (ADF) dan kadar Neutral Detergent Fiber (NDF)

jerami jagung fermentasi yang di berikan jamur *Trichoderma viride* dengan lama inkubasi berbeda dapat dilihat pada Tabel 3.

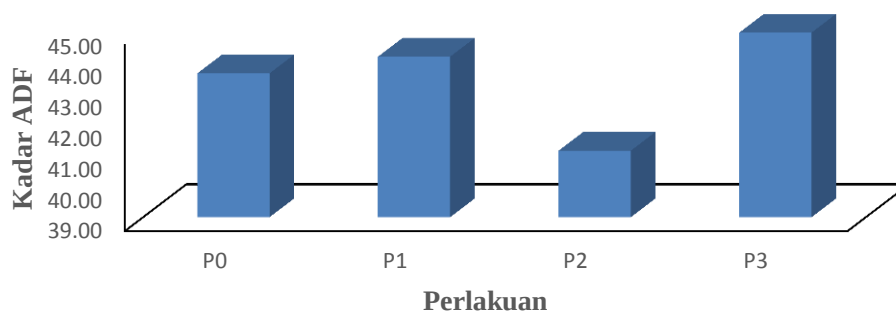
Tabel 3. Rataan kadar Acid Detergent Fiber (ADF) dan kadar Neutral Detergen Fiber (NDF) jerami jagung fermentasi yang di berikan jamur *Trichoderma Viride* dengan lama inkubasi berbeda (%).

Parameter	Perlakuan			
	P0	P1	P2	P3
ADF	43,64 ^b ± 0,47	44,17 ^b ± 0,30	41,14 ^a ± 0,61	44,95 ^c ± 0,34
NDF	66,20 ^d ± 0,47	59,47 ^c ± 0,29	52,92 ^a ± 0,73	57,46 ^b ± 0,27

Keterangan: Superskrip berbeda pada baris yang sama menunjukkan berpengaruh nyata ($P < 0,05$) berdasarkan uji Duncan. P₀ = kontrol; P₁ = masa inkubasi 1 minggu; P₂ = masa inkubasi 2 minggu; P₃ = masa inkubasi 3 minggu.

4.1 Kandungan Acid Detergent Fiber(ADF)

ADF merupakan zat makanan yang tidak larut dalam detergen asam yang terdiri dari selulosa, lignin dan silika. Hasil analisis proksimat kandungan ADF jerami jagung fermentasi yang diberikan jamur *Trichoderma Viride* dengan lama inkubasi berbeda disajikan pada Grafik 1.



Grafik 1. Analisis kandungan ADF jerami jagung fermentasi yang diberikan jamur *Trichoderma viride* dengan lama inkubasi berbeda.

Kandungan ADF jerami jagung fermentasi yang diberikan jamur *Trichoderma viride* dengan lama inkubasi berbeda dapat dilihat pada Grafik 1. Kandungan ADF antar perlakuan berbeda nyata ($P < 0,05$) berkisar antara 41,14% - 44,95%. Nilai tertinggi terdapat pada perlakuan P3 (masa inkubasi 3 minggu) dengan nilai sebesar 44,95% dan yang terendah terdapat pada perlakuan P2 (masa inkubasi 2 minggu) dengan nilai sebesar 41,14%. Hasil analisis ragam menunjukkan bahwa kandungan ADF jerami jagung fermentasi yang diberikan

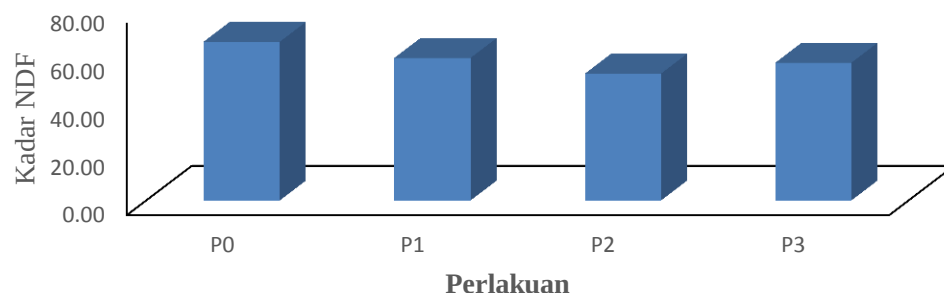
jamur *Trichoderma viride* dengan lama inkubasi berbeda berpengaruh nyata ($P < 0,05$) terhadap kandungan ADF

Berdasarkan uji Duncan, antar perlakuan P0 dan P1 tidak berbeda nyata ($P > 0,05$), tetapi perlakuan tersebut berbeda nyata ($P < 0,05$) lebih tinggi dari perlakuan P2 (Grafik 1). Hal ini diduga pada perlakuan P2 (masa inkubasi 2 minggu) terjadi penurunan kandungan ADF disebabkan adanya jamur *Trichoderma viride* yang mengandung semua komponen-komponen yang di

perluan untuk proses hidrolisis seluruh kristal selulosa.

Nilai tersebut masih berada pada kisaran persentase ADF yang diberikan kepada ternak. Secara normal persentase ADF dalam hijauan 25–45% dari bahan kering hijauan untuk diberikan pada ternak (Ruddel *et al*, 2002).

Kandungan Neutral Detergen Fiber (NDF)



Grafik 2. Analisis kandungan NDF jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda.

Kandungan ADF jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda dapat dilihat pada Grafik 2. Kandungan NDF antar perlakuan berbeda nyata ($P < 0,05$) berkisar antara 52,92% - 66,20%. Nilai tertinggi terdapat pada perlakuan P0 (tanpa inkubasi) dengan nilai sebesar 66,20% dan yang terendah terdapat pada perlakuan P2 (masa inkubasi 2 minggu) dengan nilai sebesar 52,92%.

Hasil analisis ragam menunjukkan bahwa kandungan NDF jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda berpengaruh nyata ($P < 0,05$) terhadap kandungan ADF (Lampiran 2). Berdasarkan uji Duncan, antar perlakuan P0, P1, P2 dan P3 berbeda nyata ($P > 0,05$), tetapi perlakuan P2 berbeda nyata ($P < 0,05$) lebih rendah dari perlakuan P0, P1 dan P3 (Grafik 2).

Penurunan kandungan NDF dapat terjadi selama proses fermentasi disebabkan oleh adanya mikroba yang

NDF merupakan zat makanan yang tidak larut dalam detergent netral dan NDF bagian terbesar dari dinding sel tanaman. Hasil analisis proksimat kandungan NDF jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda disajikan pada Grafik 2.

dapat mencerna komponen dinding sel. Hal ini sesuai dengan pendapat Crampton dan Haris (1969) yang menyatakan bahwa penurunan kadar NDF disebabkan karena meningkatnya lignin pada tanaman mengakibatkan menurunnya hemiselulosa. Hemiselulosa merupakan komponen dinding sel yang dapat dicerna oleh mikroba. Tingginya kadar lignin menyebabkan mikroba tidak mampu menguasai hemiselulosa dan selulosa secara sempurna.

KESIMPULAN

Hasil analisis ragam menunjukkan bahwa kandungan ADF jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda berpengaruh nyata ($P < 0,05$) terhadap kandungan ADF. Disamping itu, hasil kandungan NDF menunjukkan jerami jagung fermentasi yang diberikan jamur *Tricoderma viride* dengan lama inkubasi berbeda berpengaruh nyata ($P < 0,05$) terhadap kandungan ADF.

Berdasarkan hasil penelitian dan pembahasan dapat disimpulkan bahwa pada masa inkubasi 2 minggu menghasilkan kandungan ADF dan NDF yang paling baik.

Saran

Perlu dilakukan penelitian lebih lanjut untuk melihat pengaruh pemberian jerami jagung fermentasi yang diberi jamur *Ticoderma Viride* dengan lama masa inkubasi berbeda pada ternak ruminasia.

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