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DAFTAR PUSTKA

Aberle, E.D. and T.S. Stewart.1983. Growth of fiber types and apparent fiber number in skeletal muscle of broiler and layer type chickens. Journal of Growth. 47:135-144.

Abudabos, A. 2010. Enzyme supplementation of corn-soybean meal diets improves performance in broiler chicken. International Journal of Poultry Science. 9:292-297.

Ahmed, A.E., R. Smithard, and M. Ellis. 1991. Activities of enzymes of the pancreas, and the lumen and mucosa of the small intestine in growing broiler cockerels feed on tannin-containing diets. British Journal of Nutrition. 65:189-197.

Alam, M.J., M.A.R. Howlider, M.A.H. Pramanik, and M.A. Haque. 2003. Effect of exogenous enzyme in diet on broiler performance. International Journal of Poultry Science. 2:168-173.

Angel, C.R., W. Saylor, S.L. Vieira, and N. Ward. 2011. Effects of a monocomponent protease on performance and protein utilization in 7 to 22 day-old broiler chickens. International Journal of Poultry Science. 90:2281–2286.

Anonim. 2014. Feedstuff Amino Acid Database Ajinomoto. http://ajinomoto-eurolysine.com/feedstuffs-amino-acid-database.html (diakses pada tanggal 11 Juli 2015)

Anonim. 2014. Broiler Management Handbook. Aviagen. Huntsville, Alabama.

Azizah, N., H.D. Utami., dan B.A. Nugraha. 2013. Analisis pola kemitraan usaha peternakan ayam pedaging sistem *closed house* di Plandaan Kabupaten Jombang. Jurnal Ilmu Peternakan. 23:1-5.

Barekatain, M.R., C. Antipatis, and M. Choct. 2013. Interaction between protease and xylanase in broiler chicken diets containing sorghum distillers' dried grains with solubles. Journal of Animal Feed Science and Technology. 182:71–81.

Brandelli, A., D.J. Daroit, and A. Riffel. 2010. Biochemical features of microbial keratinases and their production and applications. Journal of Applied Microbiology and Biotechnology. 85:1735-1750.

Brenes, A., S. Smith, W. Guenter, and R.R. Marquardt. 1993. Effect of enzyme supplementation on the performance and digestive tract size of broiler chickens fed wheat and barley based diets. Journal of Poultry Science. 72:1731-1739.

Caine, W.R., M.W.A. Verstegen, W.C. Sauer, S. Tamminga, and H. Schulze. 1998. Effect of protease treatment of soybean meal on content of total soluble matter and crude protein level of soybean trypsin inhibitors. Journal of Animal Feed Science and Technology. 71:177-183.

UNIVERSITAS GADJAH MADA
PENGGUNAAN PROTEASE DALAM PAKAN YANG MENGGUNAKAN LIMBAH PERTANIAN-PETERNAKAN UNTUK MENINGKATKAN KINERJA PERTUMBUHAN, PROFIL SALURAN PENCERNAAN, DAN PRODUKSI DAGING AYAM BROILER
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Chen, X.D., Q.G. Ma, M.Y. Tang, and C. Ji. 2007. Development of breast muscle and meat quality in Arbor Acres broilers, Jingxing 100 crossbred chickens and Beijing fatty chickens. Journal of Meat Science. 77:220-227.

Cheng, S., H. Hu, S. Shen, H. Takagi, M. Asano, and Y. Tsai. 1995. Production and characterization of keratinase of a feather degrading *Bacillus licheniformis* PWD-1. Journal of Bioscience, Biotechnology, and Biochemistry. 59:2239-2243.

Choct, M. 2006. Enzymes for the feed industry: past, present and future. Journal of World's Poultry Science. 62:5-16.

Cromwell, G.L., K.L. Herkelman, and T.S. Stahly. 1993. Physical, chemical and nutritional characteristics of distillers dried grains with solubles for chicks and pigs. Journal of Animal Science. 71:679 - 686.

Dworkin, L.D., G.M. Levine, J.J. Farber, and N.H. Spector. 1976. Small intestinal mass of the rat is partially determined by indirect effects on intraluminal nutrition. Journal of Gastroenterology. 71:626-630.

Fraser, R.D.B. and D.A.D. Parry. 2003. Macrofibril assembly in trichocyte (Hard) keratin. Journal of Structural Biology. 142:319–325.

Freitas, D.M., S.L. Vieira, C.R. Angel, A. Favero, and A. Maiorka. 2011. Performance and nutrient utilization of broilers fed diets supplemented with a novel mono-component protease. Journal of Applied Poultry Research. 20:322–334.

Ghazi, S., J.A. Rooke, H. Galbraith, and M.R. Bedford. 2002. The potential for the improvement of the nutritive value of soya-bean meal by different protease in broiler chicks and broiler cockerels. Journal of British Poultry Science. 43:70-77

Ghosh, A., K. Chakrabarti, and D. Chattopadhyay. 2008. Degradation of raw feather by a novel high molecular weight extracellular protease from newly isolated *Bacillus cereus* DCUW. Journal of Industrial Microbiology and Biotechnolology. 35:825–834.

Gupta, R. and P. Ramnani. 2006. Microbial keratinases and their prospective applications : an overview. Journal of Applied Microbiolology and Biotechnology. 70:21-33.

Hartadi, H. S. 1980. Table of feed composition for Indonesia. International Feedstuffs Institute, Utah Agricultural Experiment Station, Utah State University, Logan, Utah.

Hendriks, W.H., C.A. Butts, D.V. Thomas, K.A.C. James, P.C.A. Morel, and M.W.A. Verstegen. 2002. Nutritional quality and variation of meat and bone meal. Journal of Poultry Animal Science. 10:1507-1516.

Iwamoto, H., Y. Hart, Y. Ono, and H. Takahara. 1992. Breed differences in the histochemical properties of the *M. Iliotibialis lateralis* myofiber of domestic cocks. Journal of British Poultry Science. 33:321-328.

Jones, L. 2001. Hair Structure anatomy and comparative anatomy. Clinical Dermatology. 19:95–103.

UNIVERSITAS GADJAH MADA
PENGGUNAAN PROTEASE DALAM PAKAN YANG MENGGUNAKAN LIMBAH PERTANIAN-PETERNAKAN UNTUK MENINGKATKAN KINERJA PERTUMBUHAN, PROFIL SALURAN PENCERNAAN, DAN PRODUKSI DAGING AYAM BROILER
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Khattak, F.M., T.N. Pasha, Z. Hayat, and A. Mahmud. 2006. Enzymes in poultry nutrition. Journal of Animal Poultry Science. 16:1-2.

Kureshy, N., D.A. Devis, and C.R. Arnold. 2000. Partial replacement of fish meal with meat and bone meal, flash dried poultry by product meal, and enzymes digested poultry by product meal in practical diets for juvenile red drum. North American Journal of Aquaculture. 62:266-272.

Lesson, S. and J.D. Summers. 2005. Commercial Poultry Nutrition. 3rd ed. University Books. Canada.

Lin, X., C.G. Lee, E.S. Casale, and J.C.H. Shih. 1992. Purification and characterization of a keratinase from a feather-degrading *Bacillus licheniformis* strain. Journal of Applied and Environmental Microbiology. 58:3271-3275.

Loar, R.E., J.R. Donaldson, and A. Corzo. 2012. Effects of feeding distillers dried grains with solubles to broilers from 0 to 42 days post hatch on broiler performance, carcass characteristics, and selected intestinal characteristics. Journal of Applied Poultry Research. 21:48–62.

Loar, R.E., J.S. Moritz., J.R. Donaldson, and A. Corzo. 2010. Effects of feeding distiller's dried grains with solubles to broilers from 0 to 28 days post hatch on broiler performance, feed manufacturing efficiency, and selected intestinal characteristics. Journal of Poultry Science. 89:2242–2250.

Mahagna, M., I. Nir., M. Larbier, and Z. Nitsan. 1995. Effect of age and exogenous amylase and protease on development of the digestive tract, pancreatic enzyme activities, and digestibility of nutrients in young meat-type chicks. Reproduction Nutrition Development. 35:201-212.

Martin, D.W., P.A. Mayes, V.W. Rodwell, and D.K. Granner. Alih bahasa oleh Darmawan, I. 1985. Harper's Review of Biochemistry. EGC Penerbit Buku Kedokteran. Jakarta.

Neto, R.M., M.L. Ceccantini, and J.I. Fernandes. 2012. Productive performance, intestinal morphology, and carcass yield of broilers fed conventional and alternative diets containing commercial enzymatic complex. International Journal of Poultry Science. 11:505-516.

Okoroma, E.A., D. Garelick, O.O. Abiola, and D. Purchase. 2012. Identification and characterisation of a *Bacillus licheniformis* strain with profound keratinase activity for degradation of melanised feather. International Biodeterioration and Biodegradation. 74:54 - 60.

Oxenboll, K.M., K. Pontoppidan, and F. Fru-Nji. 2011. Use of a protease in poultry feed offers promising environmental benefits. International Journal of Poultry Science. 10:842-848.

Parsons, C.M., F. Castanon, and Y. Han. 1997. Protein and amino acid quality of meat and bone meal. International Journal of Poultry Science. 76:361-368.

Pedersen, M.B., S. Yu, P. Plumstead, and S. Dalsgaard. 2012. Comparison of four feed proteases for improvement of nutritive value of poultry feather meal. Journal of Animal Science. 90:350–352.

UNIVERSITAS GADJAH MADA
PENGGUNAAN PROTEASE DALAM PAKAN YANG MENGGUNAKAN LIMBAH PERTANIAN-PETERNAKAN UNTUK MENINGKATKAN KINERJA PERTUMBUHAN, PROFIL SALURAN PENCERNAAN, DAN PRODUKSI DAGING AYAM BROILER
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Peek, H.W., J.D. Van Der Klis, B. Vermeulen, and W.J.M. Landman. 2009. Dietary protease can alleviate negative effects of a coccidiosis infection on production performance in broiler chickens. Journal of Animal Feed Science and Technology. 150:151–159.

Pettersson, D. and P. Aman. 1989. Enzyme supplementation of a poultry diet containing rye and wheat. British Journal of Nutrition. 62:139-149.

Rada, V., Foltyn M., Lichovníková M., and Musilová A. 2013. Effects of protease supplementation of low protein broiler diets on growth parameters and carcass characteristic. MendelNet. 268-272.

Rahayu, S., M. Bata, dan W. Hadi. 2014. Substitusi konsentrat protein menggunakan tepung bulu ayam yang diolah secara fisiko-kimia dan fermentasi menggunakan *Bacillus* sp. Agripet. 1:31-36.

Ravindran, V., W.H. Hendriks, D.V. Thomas, P.C.H. Morel, and C.A. Butts. 2005. Comparison of the ileal digestibility of amino acids in meat and bone meal for broiler chickens and growing rats. International Journal of Poultry Science. 4:192-196.

Romero, L.F., C.M. Parsons, P.L. Utterback, P.W. Plumstead, and V. Ravindran. 2013. Comparative effects of dietary carbohydrases without or with protease on the ileal digestibility of energy and amino acids and AME in young broilers. Journal of Animal Feed Science and Technology. 181:35-44.

Senkoylu, N., H.E. Samli, H. Akyurek, A. Agma, and S. Yasar. 2005. Performance and egg characteristics of laying hens fed diets incorporated with poultry by product and feather meals. Journal of Applied Poultry Research. 14:542-547.

Smith, J. 1963. Relation of body size to muscle cell size and number in the chicken. Journal of Poultry Science. 42:283-290.

Spiehs, S.A., M.H. Whitney, and G.C. Shurson. 2002. Nutrient database for distiller's dried grains with solubles produced from new ethanol plants in Minnesota and South Dakota. Journal of Animal Science. 80:2639-2645.

Steel, R.G.D. and J.H. Torrie. Alih Bahasa oleh Sumantri, B. 1995. Principles and Procedures of Statistics. Gramedia Pustaka Utama. Jakarta.

Suprijatna, E., U. Atmomarsono, dan R. Kartasudjana. 2005. Ilmu Dasar Ternak Unggas. Penebar Swadaya. Bogor.

Świątkiewicz, S. and J. Koreleski. 2008. The Use of distiller's dried grains with solubles (DDGS) in poultry nutrition. Journal of World's Poultry Science. 64:257-266.

Tangendjaja, B. 2008. Distiller's dried grains with solubles (DDSG) untuk pakan. Wartazoa. 18:137-148.

Teresa, K. and B. Justyna. 2011. Biodegradation of keratin waste : teory and practical aspects. Journal of Waste Management. 31:1689-1701.

Tiwary, E. and R. Gupta. 2012. Rapid conversion of chicken feather to feather meal using dimeric keraatinase from *Bacillus licheniformis* ER-15. Journal of Bioproces Biotechniq. 2:1-5.

UNIVERSITAS GADJAH MADA
PENGGUNAAN PROTEASE DALAM PAKAN YANG MENGGUNAKAN LIMBAH PERTANIAN-PETERNAKAN UNTUK MENINGKATKAN KINERJA PERTUMBUHAN, PROFIL SALURAN PENCERNAAN, DAN PRODUKSI DAGING AYAM BROILER
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Universitas Gadjah Mada, 2016 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, J.J. and J.C.H. Shih. 1999. Fermentation production of keratinase from *Bacillus licheniformis* PWD-1 and *B. subtilis* FDB-29. Journal of Industrial Microbiology and Biotechnology. 22:608-616.

Wang, X., Y. Zhang, and C. M. Parsons. 1995. Evaluation of protein quality of meat and bone meals and poultry by product meals. Journal of Poultry Science. 74:121 (Abstr.).

Wang, Z., S.Cerrate, C. Coto, F. Yan, and P.W. Waldroup. 2007. Use of constant or increasing levels of distiller's dried grains with solubles (DDGS) in broiler diets. Journal of Poultry Science. 6:501-507.

Williams, C.M., C.G. Lee, J.D. Garlich, and J.C.H. Shih. 1991. Evaluation of a bacterial feather fermentation product, feather-lysate, as a feed protein. International Journal of Poultry Science. 70:85-94.

Williams, P. and G. Goldspink. 1978. Changes in sarcomere length and physiological properties in immobilized muscle. Journal of Anatomy. 127:459-468.

Yu, B., S.T. Wu, C.C. Liu, R. Gauthier, and P.W.S. Chiou. 2007. Effects of enzyme inclusion in a maize–soybean diet on broiler performance. Journal of Animal Feed Science and Technology. 134:283–294.

Zanella, I., N.K. Sakomura, F.G. Silversides, A. Fiqueirdo, and M. Pack. 1999. Effect of enzyme supplementation of broiler diets based on corn and soybeans. Journal of Poultry Science. 78:561–568.