

## DAFTAR PUSTAKA

- Angga, A. W., A. Yuniza., M. E. Mahata., R. Mayerni., Y. Rizal. 2018. Potential of waste tea leaves (*Camellia sinensis*) in west sumatra to be processed into poultry feed. Pak. J. Nutr., 17 (06), 287-293, 2018.
- Anantasook, N., A. Cherdthong., M. Wanapat., P. Gunun. 2013. Changes of microbial population in the rumen of dairy steers as influenced by plant containing tannins and saponins and roughage to concentrate ratio. Asian Australas. J. Anim. Sci, 26(11), 1583-1591.
- Arora, S. P. 1995. Pencernaan Mikroba Pada Ruminansia. Gadjah Mada University Press, Yogyakarta.
- Attwood, G. T., Klieve, A. V., Ouwerkerk, D. dan Patel, B. K. C. 1998. Ammonia hyperproducing bacteria from new zealand ruminants. Applied and Environmental Microbiology, 64, 1796-1804.
- Bata, M. 2008. Pengaruh molases pada amoniasi jerami padi menggunakan urea terhadap pencernaan bahan kering dan bahan organik *in vitro*. Agripet 8(2), 15-20.
- Bhatta, R., Y. Uyeno, K. Tajima, A. Taneka, Y. Yabumoto, I. Nonaka, O. Enishi, and M. Kuriha. 2009. Difference in the nature tannins on *in-vitro* ruminal methane and volatil fatty acid production and on methanogenic archaea and protozoal populations. J. Dairy Sci, 92,55512-5522.
- Beauchemin, K.A., Kreuzer, M., O'Mara, F., McAlister, T.A., 2008. Nutritional management for enteric methane abatement: a review. Aust. J. Exp. Agric, 48,21– 27.
- Boadi, D., Benchaar, C., Chiquette, J. dan Masse, D. 2004. Mitigation strategies to reduce enteric methane emissions from dairy cows: Update review. Canadian Journal of Animal Science, 84, 319-335.
- Cabrera, C., R. Artacho dan R. Gime'nez. 2006. Green Tea: beneficial effects. Journal of the american college of nutrition, 25(2), 79–99
- Carulla, J.E., M. Kreuzer, A. Machmüller and H.D. Hess. 2005. Supplementation of *Acacia mearnsii* tannins decreases methanogenesis and urinary nitrogen in forage-fed sheep, Aust. J. Agric. Res, 56, 961-970.
- Church, D. C. And W. G. Pond. 1988. The Ruminant Animal Digestive Physiology and Nutrition. Prentice Hall, Englewood Cliff, New York.
- Chuzaemi, S. 2002. Arah dan Sasaran Penelitian Nutrisi Sapi Potong Di Indonesia. Makalah Dalam Workshop Sapi Potong. Pusat Penelitian dan Pengembangan Peternakan Bogor dan Loka Penelitian Sapi Potong, Malang 11-12 April 2002.

- Cieslak, A., P. Zmora, E. Pers-Kamczyc, and M. Szumacher-Strabel. 2012. Effects of tannins source (*Vaccinium vitis idaea L.*) on rumen microbial fermentation in-vivo. *Anim. Feed Sci, Technol*, 176, 102–106. doi:10.1016/j. anifeedsci.2012.07.012
- Daswir., I. Kusuma. 1993. Sistem usaha tani gambir di Sumatera Barat. *Media komunikasi. Penelitian dan pengembangan tanaman industri*, 11, 68-74.
- Dewi. 2002. Hidrolisis limbah hasil pertanian secara enzimatik. *Akta Agrosia*, 5(2), 67 – 71.
- Doyle, P.T., C. Davendra dan G. R. Pearce. 1986. Rice Straw as A Feed for Ruminants. International Development Program of Australian Universities and Colleges Limited (IDP). Canberra, Australia.
- Effendi, D.S., M. Syakir, M. Yusron, W. (2015). Budi daya dan Pasca Panen Teh. Pusat Penelitian dan Pengembangan Perkebunan. Badan Penelitian dan Pengembangan Pertanian, Kementerian Pertanian.
- Fernandes, T., Zambom, M. Z., Castagnara, D. D., Souza, L. C., Damasceno, D. O., Schmidt, E. L. 2015. Use of dried waste of cassava starch extraction for feeding lactating cows. *Anais da Academia Brasileira de Ciências*, Rio de Janeiro, 87(2), 1101-1111.
- Frutos P. Hervas, G. Giralde, F.J. and Mantecon, A. R. 2004. Review: Tannins and ruminant nutrition. *Spanish Journal of Agriculture Research*, 2(2), 191-202.
- Grainger, C., T. Clarke, M.J. Auld, K.A. Beauchemin, S.M. McGinn, G.C. Waghorn and R.J. Eckard. 2009. Potential use of *Acacia mearnsii* condensed tannins to reduce methane emissions and nitrogen excretion from grazing dairy cows. *Can. J. Anim. Sci*, 89, 241-251.
- Guo, Y.-Q., Liu, J. X., Zhu, W. Y., Denman, S. E. dan McSweeney, C. S. 2008. Effect of tea saponin on methanogenesis, microbial community structure and expression of *mcrA* gene, in cultures of rumen micro-organisms. *Letters in Applied Microbiology*, 47, 421-426.
- Hagerman, A. E. 2002. *Tannin Chemistry*, Department of Chemistry and Biochemistry. Oxford: Miami University.
- Haq M.S. dan Karyudi. 2013. Upaya peningkatan produksi teh (*Camellia sinensis L.*) O. Kuntze) melalui penerapan kultur teknis. *Jurnal Penelitian Teh dan Kina*, 24(1), 71-84.
- Hu, W.-L., Liu, J.-X., Ye, J.-A., Wu, Y.M. and Guo, Y.-Q. 2005. Effect of tea saponin on rumen fermentation in vitro. *Animal Feed Science and Technology*, 120, 333-339.

- Ismail, R. 2011. Pengaruh penggunaan limbah tape singkong dalam ransum terhadap konsentrasi  $\text{NH}_3$  dan produksi gas total pada cairan rumen domba (*in vitro*). Skripsi. Institut Pertanian Bogor.
- Jayanegara, A. 2008. Reducing methane emissions from livestock: nutritional approaches. Proceedings of Indonesian Students Scientific Meeting (ISSM), Institute for Science and Technology Studies (ISTECS) European Chapter, 13-15 May 2008, Delft, the Netherlands: 18-21.
- Komar. 1984. Teknologi Pengolahan Jerami Sebagai Makanan Ternak. Yayasan Dian Grahita, Bandung.
- Kreuzer, M. dan C.R. Soliva. 2008. Nutrition: key to methane mitigation in ruminants. Proc. Soc. Nutr. Physiol., 17: 168-171.
- Kristina, Nilla, J. Iestari, dan H. Fauza. 2016. Keragaman morfologi dan kadar katekin tanaman daun gambir berdaun merah yang tersebar pada berbagai ketinggian tempat di Sumatera Barat. Pros Sem Nas Masy Biodiv Indon, 2(1), 43-48.
- Lopez, S. 2005. In vitro and in situ techniques for estimating digestibility. Dalam J. Dijkstra, J. M. Forbes, and J. France (Eds). Quantitative aspect of ruminant digestion and metabolism. 2nd Edition. ISBN 0-85199-8143. CABI Publishing, London.
- Makkar, H. P. S., M Blummel and K. Becker. 1995. Formation of complexes between polyvinyl pyrrolidone and polyethylene glycol with tanins and their implication in gas production and true digestibility in in-vitro techniques. J. Nutr, 73, 897-913.
- Makkar, H.P.S., 2003. Effects and fate of tanins in ruminant animals, adaptation to tanins, and strategies to overcome detrimental effects of feeding tanin-rich feeds. Small Rum, Res. 49, 241–256.
- Mao, H.-L., Wang, J.-K., Zhou, Y.-Y. dan Liu, J.-X. 2010. Effects of addition of tea saponins and soybean oil on methane production, fermentation and microbial population in the rumen of growing lambs. Livestock Science, 129, 56-62.
- Martin C, Doreau M, Morgavi DP. 2008. Methane Mitigation in Ruminants: From Rumen Microbes to The Animal. Inra, Ur 1213. Herbivores Research Unit. Research Centre of Clermont-Ferrand-Theix. F-63122. France (FR): St Genès Champanelle.
- McAllister, T.A., Newbold, C.J. 2008. Redirecting rumen fermentation to reduce methanogenesis. Aust. J. Exp. Agric, 48, 7–13.
- McDonald, P. 1981. Biochemistry of Silage. John Wiley and Sons, New York.

- McDonald. 1988. Animal Nutrition. 2nd Edition. Longman Scientific and Technical Co Published in The United State With John Welley and Sons, Inc. New York.
- McDonald, P., R. A. Edwards and J. F. D. Greenhalg. 2002. Animal Nutrition. 6th Edition. Prentice Hall, London.
- McLeod, M. N. 1974. Plant tannin. Their Role in Forage Quality Nutrition Abstract and Reviews , 44, 804-8115.
- McSweeney, C. S., Palmer, B., McNeill, D. M. dan Krause, D. O. 2001. Microbial interactions with tannins: nutritional consequences for ruminants. Animal FeedScience and Technology, 91, 83-93
- Min, B. R., Barry, T. N., Attwood, G. T. dan McNabb, W. C. 2003. The effect of condensed tannins on the nutrition and health of ruminants fed fresh temperate forages: a review. Animal Feed Science and Technology, 106, 3-19.
- Morgavi, D.P., Forano, E., Martin, C. and Newbold, C.J., 2010. Microbial ecosystem and methanogenesis in ruminants. Animal, 4, 1024–1036.
- Moss AR, Jouany JP, dan Newbold J. 2000. Methane production by ruminants: its contribution to global warming. Ann. Zootech, 49, 231-253.
- Mueller-Harvey, I. 2006. Review unravelling the conundrum of tannins in animal nutrition and heath. Journal of the Science of Food and Agriculture, 86, 2010-2037.
- Nasution, M.Z. dan W. Tjiptadi. 1975. Pengolahan Teh. Departemen Teknologi Hasil Pertanian, FATEMETA, IPB, Bogor.
- Ningrat, R.W.S., M. Zain, Erpomen and H. Suryani. 2017. Effect of doses and different sources of tannins on in vitro ruminal methane, volatile fatty acids production and on bacteria and protozoa populations. Asian J. Anim. Sci., 11, 47-53.
- Nolan, J.V. 1993. Nitrogen Kinetics. In : Quantitative Aspect of Ruminan Digestion and Metabolism. J.M FORBES and J. FRANCE (Editors). C. AB International. Wallingford. pp. 123-144
- Novrariansi, N. 2017. Pengaruh Penggunaan Jerami Jagung Sebagai Pengganti Rumput Lapangan dalam Ransum Terhadap Kecernaan Fraksi Serat (NDF, ADF, Selulosa dan Hemiselulosa) Secara *In vitro*. Skripsi. Fakultas Peternakan. Universitas Andalas. Payakumbuh.
- Orskov, E. R. 1982. Protein Nutrition In Ruminants. Academic Press, New York.

- Pambudi J. 2009. Potensi Teh sebagai Sumber Zat Gizi dan Peranannya dalam Kesehatan. Jakarta: Lembaga Riset Perkebunan Indonesia, Departemen Kesehatan dan Kesejahteraan Sosial RI.
- Parakkasi, A. 1999. Ilmu Nutrisi dan Makanan Ternak Ruminansia. Universitas Indonesia. Jakarta.
- Rahadi, S. 2008. Pembuatan Amoniasi Urea Jerami Padi. Sulawesi Selatan
- Ramdani, D., Chaudhry, A. S. dan Seal, C. J. 2013. Chemical composition, plant secondary metabolites, and minerals of green and black teas and the effect of different tea-to-water ratios during their extraction on the composition of their spent leaves as potential additives for ruminants. *Journal of Agricultural and Food Chemistry*, 61, 4961-4967.
- Ramaiyulis, Sajatmiko, dan Yurni S.A. 2013. Pertumbuhan Protozoa Dalam Cairan Rumen Sapi Yang Disuplementasi Dengan Defaunator Sisa Pengolahan Daun Gambir Secara *In vitro*. Pros. Semnas. Optimalisasi Sistem Pertanian terpadu dan Mandiri Menuju Ketahanan Pangan. Politeknik Pertanian Negeri Payakumbuh, Payakumbuh.
- Sasongko, W.T., L.M. Yusiati, Z.Bachruddin. 2010. Optimalisasi pengikatan tanin daun nangka dengan protein Bovine serum albumin. *Buletin Peternakan*, 34,154-158.
- Sejian V, Lal R, Lakritz J, Ezeji T. 2011. Measurement and prediction of enteric methane emission. *Int. J. Biomet*, 55, 1-16.
- Sentana, P 2005. Perbaikan Status Nutrisi pada Sapi Bali Bunting dalam Upaya Meningkatkan Bobot Lahir dan Pertumbuhan Pedet Prasapah sebagai Penghasil Daging Bermutu. Pros. Semiloka Peternakan, Kupang
- Setiarto, R. H. B., 2013. Prospek dan potensi pemanfaatan lignoselulosa jerami padi menjadi kompos, silase dan biogas melalui fermentasi mikroba. *Jurnal Selulosa*, 3(2), 51 – 66.
- Steel, R.G.D. dan Torrie, J. H. 1991. Prinsip dan Prosedur Statistika Suatu Pendekatan Biometrik (Terjemahan: Bambang Sumantri). PT. Gramedia. Jakarta.
- Syahrir, S., dan R, Islamiyati. 2010. Model Pemanfaatan Tanaman Murbei Sebagai Sumber Pakan Berkualitas Guna Meningkatkan Pendapatan Petani Serta Mendukung Produksi Ternak Berkelanjutan. Laporan Akhir Hibah Kompetatif Penelitian Startegis Nasional, Lembaga Penelitian Dan Pengabdian Kepada Masyarakat Universitas Hasanuddin, Makassar.
- Szumacher-Strabel, M. dan Cieślak, A. 2010. Potential of phytofactors to mitigate rumen ammonia and methane production. *Journal of Animal and Feed Sciences*, 19, 319-337.

- Tilley, JMA, and RA Terry. 1963. A two stage technique for in vitro digestin of forage crops. J. Brit. Grass. Soc, 18, 108-111.
- Tillman, A.D., H. Hartadi, S. Reksohadiprojo, S. Prawirokusumo. dan S. Lebdoesoekojo. 1998. Ilmu Makanan Ternak Dasar. Edisi Keenam. Gadjah Mada University Press. Yogyakarta.
- Tillman, A. D., H. Hartadi, S. Reksohadiprojo, S. Prawirokusumo dan S. Lebdoesoekojo. 2005. Ilmu Makanan Ternak Dasar. Gadjah Mada University Press, Yogyakarta.
- Towaha, J. 2013. Kandungan senyawa kimia pada daun teh (*Camellia sinensis*). Warta Penelitian dan Pengembangan Tanaman Industri, 19(3).
- Vlaming, J.B. 2008. Quantifying Variation in Estimated Methane Emission from Ruminants Using the SF<sub>6</sub>Tracer Fechnique. A Thesis of Doctor of Phylosophy in Animal Science. Massey University. New Zealand.
- Wahyuni, I., M., D, Anis. M dan Marry. C. 2014. Kecernaan bahan kering dan bahan organik dan degradabilitas serat pada pakan yang disuplementasi tanin dan saponin. Agripet, 2(2), 115-124.
- Wina, E., Muetzel, S. dan Becker, K. 2005. The Impact of Saponins or Saponin-Containing Plant Materials on Ruminant Productions A Review. Journal of Agricultural and Food Chemistry, 53, 8093-81
- Winarti, S. (2010) Makanan Fungsional. Yogyakarta: Graha Ilmu.
- Widodo. 2002. Perkembangan Bisnis Peternakan. Makalah seminar nasional. Universitas Negeri Malang. Malang
- Widyobroto, B.P., P.S Budhi dan A. Agus. 2007. Pengaruh aras undegradable protein dan energi terhadap kinetik fermentasi rumen dan sintesis protein mikroba pada sapi perah. Journal of the Indonesian Tropical Agriculture, 32 (3), 194-200.
- Wiyosuhanto, Sridadi. 1985. Petunjuk Teknik Pembinaan Pemanfaatan Limbah dan Teknik Pengolahan Jerami Padi Dengan Cara Amoniasi. Jakarta: Direktorat Bina Produksi Peternakan, Direktorat Jenderal Peternakan, Departemen Pertanian
- Yunita, E. 2016. Pengaruh penggunaan pelepah sawit amoniasi yang ditambahkan dengan ampas daun gambir dalam ransum ruminansia terhadap pencernaan bahan kering, bahan organik dan protein kasar secara *in vitro* [skripsi]. Universitas Andalas, Padang.
- Yunus, M. 1997. Pengaruh umur pemotongan dan spesies rumput terhadap produksi, komposisi kimia, pencernaan *in-vitro* dan *in-sacco*. Thesis S2. Fakultas Pascasarjana. Universitas Gajah Mada. Yogyakarta.

Zain, M., T. Sutardi, Suryahadi dan N. Ramli. 2008. Effect of defaunation and supplementation methionine hydroxy analogue and branched chain amino acid in growing sheep diet based on palm press fiber ammoniated. *Pakistan Journal of Nutrition*, 7(6), 813-816.

Zamzari, M. Sunarso dan Sutrisno. 2012. Pemanfaatan tanin alami dalam memproteksi protein bungkil kelapa ditinjau dari fermentabilitas protein secara *in vitro*. *Animal Agriculture J*, 1(1), 406-412.

Zhang, H. L., Y. Chen, X. L. Xu dan Y. X. Yang. 2013. Effects of branched-chain amino acids on *in vitro* ruminal fermentation of wheat straw. *Asian-Aust. J. Anim. Sci*, 26(4), 523-528.

Zhen, Y. S., Z.M. Chen, S.J. Cheng and M.L. Chen. 2002. *Tea Bioactivity and Therapeutic Potential*. Taylor and Francis, London.



