

DAFTAR PUSTAKA

- Addisu, S. 2016. Effect of dietary tannin source feeds on ruminal fermentation and production of cattle. *A Review Online Journal of Animal and Feed Research*. 6(2): 45-56
- Aldred, M. E. 2009. *Pharmacology: A Handbook for Complementary Healthcare Professionals*. Elsevier. Amsterdam. pp. 163-164.
- Anas, M. A., L. M. Yusiati, A. Kurniawati, C. Hanim. 2015. Evaluation of *Albazia chinensis* as tannins source for *in vitro* methane production inhibitor agents sheep rumen liquor. The 6 th International Seminar on Tropical Animal Production. Yogyakarta. pp. 261-265.
- AOAC. 2005. *Official Method of analysis*. 18th ed. Association of Official Analytical Chemist. AOAC International. William Harwitz (ed). United States of America.
- Ashrafuzzaman, M., S.D. Khanam, dan S.H. Prophan. 2012. *In vitro* regeneration and multiplication of jackfruit (*artocarpus heterophyllus* L.). *Research Journal of Biology*. 2: 59-65.
- Azad, A.K., J.G. Jones, dan N. Haq. 2007. Assessing morphological and isozyme variation of jackfruit (*Artocarpus heterophyllus* Lam). Bangladesh. *Agroforest Systems*. 71: 109-125.
- Badan Pusat Statistik. 2018. *Populasi Sapi Potong Menurut Provinsi (2009-2018)*. Jakarta.
- Bennick, A. 2002. Interaction action of plant polyphenols with salivary proteins. *Crit Rev Oral Biol Med*. 13(2): 184-196
- Bristow, A.W., D.C. Whitehead and J.E. Cockburn. 1992. Nitrogenous constituents in the cattle, sheep, and goats. *J. Sci. Food. Agric*. 59: 387-39
- Chavan, U. D. 2018. *Phenolic: Antioxidants and Health Benefits*. Scientific Publishers. Jodhpur. P 64.
- Cheeke, P. R. 1989. *Toxicants of Plant Origin*. CRC Press. Boca Raton.
- Chen, X.B. dan M. J. Gomes. 1992. Estimation of microbial protein supply to sheep and cattle based on urinary excretion of purine derivatives an overview of technical details. Occasional Publication 1992. International Feed Resources Unit. Rowett Research Institute, Bucksburn, Aberdeen AB2 9SB, UK.
- Chen, X.B., dan H.P.S, Makar. 2004. Estimation of Microbial Protein Supply In Ruminants Using Urinary Purine Derivats. *Spr.Sci*. pp 174-175
- Chen, X.B., G. Grubic, E. R. Orskov and P. Osuji. 1990. Effect of feeding frequency on diurnal variation in plasma and urinary purine derivatives in steers. *J. Anim. Prod*. 55: 185-191.

- Dubey, N. K. 2015. Plants as a Source of a Natural Antioxidants. CABI. UK
- Fahey, G. C., and L. L. Berger. 1988. Carbohydrate Nutrition of Ruminants. In :D.C Chruch (Ed.). Digestive Physiologi and Nutrition of Ruminants. The Ruminant Animal. Prentice Hall Eglewood Cliifs, New Jersey.
- Goel, G., A. K. Puniya., C. N. Agullar., dan K. Singh. 2005. Interaction of gut microflora with tanins in feeds. *Naturwissenschaften*. 92(11): 497-503.
- Hasanah, C., A. Kurniawati, L.M. Yusiati, Muhlisin, and Z. Bachrhuudin. 2019. Metana production and metanogens diversity in *in vitro* ruminal fermentation with mahogany leaves meal (*Swietenia mahagoni*) as tannin source. IOP Conference Series: Earth Environmental Science. 478(2019): 1-5.
- Hawk, X. B., B. L. Oser dan W.H. Summercon. 1976. Physiological chemistry. 14th ed. Mc. Graw Hill Publishing Ltd. London.
- Herbarium, M. (2011). Taksonomi Tumbuhan dan Herbarium Madanense (MEDA). Fakultas Pertanian Universitas Sumatra Utara, Medan.
- Hindratiningrum, N., M. Bata, dan S. A. Santosa. 2011. Produk fermentasi rumen dan produksi protein mikroba sapi lokal yang diberi pakan jerami amoniasi dan beberapa bahan pakan sumber energi. *Agripet* 11(2): 29-34.
- Husnaeni, Sunarso, dan L. K. Nuswantara. 2015. Perkiraan pasokan nitrogen mikroba pada domba ekor tipis yang diberi bungkil kedelai terproteksi tanin. *Jurnal Veteriner*. 16(2): 212-219.
- Ismarani. 2012. Potensi senyawa tanin dalam menunjang produksi ramah lingkungan. *Jurnal agribisnis dan pengembangan wilayah*. 3(2). 46-48
- Jackson, R. S. 2000. Wine Science: Principles, Practice, Perception. 2nd ed. Academic Press. United States. P. 371.
- Jackson, R. S. 2014. Wine Science: Principles and Applications. 4th ed. Academic Press. Unites States. P. 560.
- Jayanegara, A dan A. Sofyan. 2008. Penentuan aktivitas biologis tanin beberapa hijauan secara *in vitro* menggunakan 'hohenheim gas test' dengan polietilen glikol sebagai determinan. *Jurnal Media Peternakan*. 31(1): 44-52.
- Jayanegara, A., H.P.S. Makkar, dan K. Becker. 2010. Emisi metana dan fermentasi rumen *in vitro* ransum hay yang mengandung tanin murni pada konsentrasi rendah. *Jurnal Media Peternakan*. 32(3): 185-195.

- Kamra, D. N., N. Agarwal, dan L.C. Chaudhary. 2006. Inhibition of ruminal methanogenesis by tropical plants containing secondary compounds. *International Congress Series*. 1293(1): 156-163
- Kongmanila, D. and I. Ledin. 2009. Chemical composition of some tropical foliage species and their intake and digestibility by goats. *Asian-Aust J. Anim. Sci.* 22: 803-811.
- Kosasih, A.S. 2010. Penentuan jenis dan pola tanam pada hutan tanaman industri (HTI) dan hutan tanaman rakyat (HTR). *Prosiding Workshop Sintesa Hasil Penelitian Hutan Tanaman*. Kementerian Kehutanan, Bogor. 463-469
- Kosasih, E. 2013. *Produksi Bibit Berkualitas Jati (Tectona grandis Linn. F.)*. Balai Perbenihan Tanaman Hutan Jawa dan Madura. Sumedang, Jawa Barat.
- Le-Bourvellec, C. and C.M.G.C. Renard. 2012. Interactions between polyphenols and macromolecules: quantification methods and mechanisms. *Critical Reviews in Food Science and Nutrition*. 52(3): 213-248.
- Liang, J.B., M. Matsumoto., and B.A. Young. 1994. Purine derivative excretion and ruminal microbial yield in Malaysian cattle and swamp buffalo. *Anim. Feed Sci. Technol.* 47: 189–199.
- Makkar, H.P.S. 1998. Effect Of Antinutrients On The Nutritional Value Of Legume Diets. *Proceedings of the seventh scientific workshop in tromso*.
- Makkar, H.P.S., M. Bluemmel, N. K. Borowy, and K. Becker. 1993. Gravimetric determination of tannins and their correlations with chemical and protein precipitation methods, *J. Sci. Food Agric.* 61: 161–165.
- Martoharsono, S. 1984. *Biokimia*. UGM Press. Yogyakarta. 91.
- Mueller, H. I. 2006. Unravelling the conundrum of tannins in animal nutrition and health. *J. Sci. Food Agric.* 86: 2010-2037.
- Muhlisin., M., A. Anas, C. Hanim, and L. M. Yusiati. 2018. *Calliandra calothyrsus* as tannins source for *in vitro* methane production inhibitor agents. *Int Sem Trop. Anim. Prod.* 133-136.
- Naveen, Y. P. and A. Urooj. 2015. Phytochemical, proximate composition, antioxidant potential of *Swietenia mahagoni* leaves. *Animal J. Pharm.* 5(3):161-166.
- Nelson, D.L. and M.M. Cox. 1999. *Principles of Biochemistry*. 3rd ed. Worth Publishers, Wisconsin.
- Nolan J V, and L. P. Khan (2004). The use of urinary excretion of purine metabolites as an index of microbial protein supply in ruminants. In:

- Estimasi of microbial protein supply in ruminant using urinary purine derivats. Springer Science-Business Media Dordrecht, Jerman. pp. 15-27.
- Nora, D. T. Astuti, dan D. Wahid. 2017. Efektivitas daun nangka dalam ransum ruminansia terhadap, pencernaan bahan kering, bahan organik dan kandungan tanin. *Jurnal Bibiet*. 2(1): 20-26
- Nugroho. 2011. Limbah Teh Hitam (*Camelia sinensis*) Sebagai Sumber Tanin Untuk Proteksi Protein Dari Degradasi Mikrobia Rumen Secara *In vitro*. Skripsi Sarjana Peternakan. Fakultas Peternakan, Universitas Gadjah Mada, Yogyakarta.
- Orskov, E.R. 1992. Protein Nutrition in Ruminants. 2nd ed. Academic Press Limited, London
- Pamungkas, D., Y. N. Anggraeni, Kusmantono, dan N. H. Krishna. 2008. Produksi asam lemak terbang dan amonia rumen sapi bali padaimbangan daun lamtoro dan pakan lengkap yang berbeda. Seminar Nasional Teknologi Peternakan dan Veteriner. pp 197-204.
- Patra, A. K. dan J. Saxena. 2010. A new perspective on the use of plant secondary metabolites to inhibit methanogenesis in the rumen. *J. Phytochemistry*. 71: 1198-1222.
- Perez, J.F., J. Balcells, J.A. Guada and C. Castrillo. 1996 a. Determination of rumen microbial-nitrogen production in sheep: A comparison of urinary purine excretion with method using 15 N and purine bases as markers of mikrobial-nitrogen entering the duodenum. *Br. J. Nutr.* 75: 699-709.
- Perez, J.F., J. Balcells, J.A. Guada and C. Castrillo. 1997. Rumen microbial production estimated either from urinary purine derivatives excretion or from direct measurement of 15 N and purine bases as microbial markers: effect of protein source and rumen bacteria isolates. *J. Anim. Sci.* 65: 225-236
- Priambudi, R.A., T.T. Kendi, dan Siswanti. 2020. Ekstrak sabut kelapa (*Cocos nucifera*) sebagai biomordan pada bahan tekstil dengan pewarna alami daun jati (*Tectona grandis L.f*). Seminar Nasional Teknik Kimia “Kejuangan”. Yogyakarta. P.4
- Puastuti, W., dan I. W. Mathius. 2005. Pengaruh substitusi bungkil kedelai terproteksi getah pisang sebagai sumber protein tahan degradasi terhadap fermentasi rumen. Seminar Nasional Teknologi Peternakan dan Veteriner. P.408
- Puchala, R. and G.W. Kulasek. 1992. Estimation of microbial protein flow from the rumen of sheep using microbial nucleic acid and urinary excretion of purine derivatives. *Can J. Anim. Sci.* 72: 821-830

- Pudjiono. 2014. Produksi Bibit Jati Unggul (*Tectona grandis L.f*) Klon dan Budidayanya. Institut Pertanian Bogor Press. Bogor.
- Rahmawati. 2017. Proteksi bungkil kedelai dengan hijauan sumber tanin dan pengaruhnya terhadap pencernaan zat-zat makanan dan profil cairan rumen secara *in vitro*. Jurnal Ilmiah Peternakan. 5(1): 47-54
- Ranjhan, S. 1980. Animal Nutrition and Feeding Practices in India. 2nd ed. Vikas Publishing House. New Delhi. pp 93 - 104
- Santos-Buelga, C. dan V. de Freitas. 2008. Wine Chemistry and Biochemistry: Influence of Phenolics on Wine Organoleptic Properties. Springer Science & Business Media. P. 569.
- Santoso, B. dan T. J. Hariadi. 2007. Pengaruh suplementasi acacia mangium wild pada pennisetum purpureum terhadap karakteristik fermentasi dan produksi gas metana *in vitro*. 3(2): 106-113.
- Sasongko, W.T. 2011. Pemanfaatan Tanin Daun Nangka untuk Meningkatkan Nilai Rumen Undegradated Protein pada Bahan Pakan Protein Tinggi. Tesis. Fakultas Peternakan UGM.
- Seigler, D. S. 1998. Plant Secondary Metabolism. Springer. New York
- Shingfield, K.J. and N.W. Offer. 1998 b. Evaluation of milk allantoin excretion as an index of microbial protein supply in lactating dairy cows. J. Anim. Sci. 67: 371-385
- Smith, R. G. D., E. Zoetendel, dan R. I. Mackie. 2005. Bacterial Mechanisms to Overcome Inhibitory Effects of Dietary Tannins. Microb. Ecol. P. 50.
- Sugoro, I. dan I. Yuniarto. 2006. Pertumbuhan protozoa dalam cairan rumen kerbau yang disuplementasi tanin secara *in vitro*. Jurnal Ilmiah Aplikasi Isotop dan Radiasi. 2(2): 48-57
- Suhono, B. 2010. Ensiklopedia Biologi Dunia Tumbuhan. PT Lentera Abadi. Jakarta.
- Suprayogi, W. P. S. Sintesis protein mikroba sapi Peranakan Ongole yang diberi pakan berserat. Jurnal Indonesia Tropical Agriculture. 28(3): 115-118.
- Uyeno, Y. 2015. Rumen Microbiology: From Evolution to Revolution. Rumen Microbiology: An Overview. A. K. Puniya, R. Singh, and D. N. Kamra (eds.). Springer. New Delhi. pp 199-212.
- Waghorn, G. C. dan W. C. McNabb. 2003. Consequences of plant phenolic compounds for productivity and health of ruminants. Proc. Nutr. Soc. 62: 383-392.
- Wahyono, T., W. T. Sasongko, M. Sholihah, dan M.R. Pikoli. 2017. Pengaruh penambahan tanin daun nangka (*Artocarpus heterophyllus*) terhadap nilai biologis daun kelor (*Moringa oleifera*)

dan jerami kacang hijau (*Vigna radiata*) secara *in vitro*. Buletin Peternakan. 41(1): 15-25.

- Young, E. G. and C. F. Conway. 1942. On the estimation of allantoin by the rimini-schryver reaction. J. Biochem. Chem. 142(2): 839-853
- Yusiati, L. M. 2005. Pengembangan Metode Estimasi Sintesis Protein Mikroba Rumen Menggunakan Ekskresi Derivat Purin dalam Urin Berbagai Ternak Ruminansia Indonesia. Disertasi Program Pascasarjana. Fakultas Peternakan, Universitas Gadjah Mada, Yogyakarta. pp 186-210
- Yusiati, L.M., Z. Bachrudin., C. Hanim, dan S. Nurhayati. 2007. Pengaruh penambahan tepung daun ketepeng cina pada ransum dengan proporsi hijau dan konsentrat yang berbeda terhadap sintesis protein mikroba rumen. Proseding Seminar Nasional AINI VI. Kearifan Local Dalam Penyediaan Serta Pengembangan Pakan dan Ternak di Era Globalisasi. Bagian Nutrisi dan Makanan Ternak. Fakultas Peternakan. Universitas Gadjah Mada. Yogyakarta. ISBN:97979-16617-0-6