

DAFTAR PUSTAKA

- Abdullohi, E., M. Salehi and G. Moghaddam. 2017. Cryopreservation of Rooster sperm: Effect of Heat Shock Protein 70. *Cryobiology*, 76: 57-61.
- Abecia, J. A., F. Forcada, and A. Gonzales-Bulnes. 2012. Hormonal control of reproduction in small ruminants. *Animal Reproduction Science*, 130:173-179.
- Abidin, Z. dan A. Sodik. 2008. Meningkatkan Produksi Susu Kambing. Peranakan Etawa. PT. Agro Media Pustaka, Jakarta.
- Agustina, N. T. 2020. Variasi Pola Pita Protein Pada Sekret Kulit Katak *Chalcorana chalconota* (Schlegel, 1837) Kompleks. Skripsi. Universitas Andalas. Padang
- Ali, M. A., Z. Qin, S. Dou, A. Huang, Y. Wang, X. Yuan, Y. Zhang, Q. Ni, R. Azmat, and C. Zeng. 2023. Cryopreservation induces acetylation of metabolism-related proteins in boar sperm. *Internasional, Journal of Molecular Sciences*, 24(13): 1-20.
- Almadaly, E., A. Abdel-Salam, F. Sahwan, K. Kahilo, T. Abouzed, and W. Eldomany. 2023. Fertility-associated biochemical components in seminal plasma and serum of buffalo (*Bubalus bubalis*) bulls. *Frontiers in Veterinary Sciences*, 9: 1-11.
- Almahdi, A. B., Y. S. Ondho, and Sutopo. 2014. Comparative studies of semen quality on different breed of chicken in poultry breeding center temanggung-Central Java. *International refereed Journal of Engineering and Sciences (IRJES)*, 3(2): 94-103.
- Alm-Kristiansen, A. 2023. Motility subpopulations with distinct motility characteristics using swim-up-selected sperm cells from Norwegian Red bulls: Effects of freezing-thawing and between-bull variation. *Biology*, 12(8):1-8.
- Ananda, H. Gusdinal, R. Ramadhan, A. A. Abimanyu, W. H. Ningsih, and Jaswandi. 2025. Impacts of cryopreservation on semen quality and sperm protein profiles of Pesisir bulls. *Tropical Animal Science Journal*, 48(3): 189-198.
- Aprilina, N., S. Suharyati, dan P. E. Santosa. 2014. Pengaruh suhu dan lama thawing di dataran rendah terhadap kualitas semen beku sapi Simmental. *Jurnal Peternakan*, 5(8): 4-8.
- Ariantje, O. S., T. L. Yusuf, D. Sajuthi dan R. I. Arifantini. 2014. Kualitas semen cair kambing Peranakan Etawah dalam modifikasi pengencer tris dengan trehalosa dan rafinosa. *Jurnal Veteriner*, 15(1): 11-22.

- Arifiantini, I., dan T. L. Yusuf dan D. Yanti 2005. Kaji banding semen beku sapi Friesian Holstein menggunakan pengencer dari berbagai balai inseminasi buatan di Indonesia. *Journal of Animal Production*, 7(3): 168-176.
- _____. 2012. Teknik Koleksi dan Evaluasi Semen Pada Hewan. Bogor. IPB Press. Bogor
- Arunkumar, R., A. Kumaresan, M. K. Sinha, K. Elango, J. P. Ebenezer. P. Nag, and T. K. Datta. 2022. The cryopreservation process induces alterations in proteins associated with bull sperm quality: the equilibration process could be a probable critical control point. *Frontiers in Endocrinology*, 13.
- Arzaluz, C. R., M. E. Ayala, dan A. M. Aragon. 2021. Perangkat keras baru untuk mengukur motilitas dan konsentrasi sperma secara vertical. *Cytometry Part A*, 99(10): 999-1006.
- Azizah, N., S. Susilowati, B. Utomo, D. A. Kusumaningrum, T. Kostaman, Z. Muttaqin, and A. F. Arrazy. 2023. Seminal plasma protein profiles and testosterone levels as biomarker semen quality of candidate Madura bulls. *Journal of Advanced Veterinary and Animal Research*, 10(3): 429-436.
- Ax R. L., M. Dally, B. A. Didion, R.W. Lenz, C. C. Love, D. D. Varner, B. Hafez, and M. E. Bellin. 2000. Semen Evaluation: Hafez E.S.E (ed). *Reproduction in Farm Animals 7th Ed.* Lippincott Williams and Wilkins, USA.
- Baharun, A., R. I. Arifiantini, N. W. K. Karja, and S. Said. 2021. Seminal plasma protein profile based on molecular weight and their correlation with semen quality of Simmental bull. *Journal of the Indonesian Tropical Animal Agriculture*, 46(1): 20-28.
- Barbas, J. P., and R. D. Mascarenhas. 2009. Cryopreservation of domestic animal sperm cells. *Journal of Animal Sciences, Cells and Tissue Banking*, 10(1): 49-62.
- Bauskin, A. R., L. Jiang, X. Lou, L. Wu, D. Brown, and S. Breit. 2010. The TGF-beta superfamily cytokine MIC-1/GDF15: Secretory mechanisms facilitate creation of latent stromal stores. *Journal of Interferon and Cytokine Research*, 30(6): 389-397.
- Beer, L., H. Tang, S. Sriswasdi, K. Barnhart, and D. Speicher. 2011. Systematic discovery of ectopic pregnancy serum biomarkers using 3-D protein profiling 48 coupled with label-free quantitation. *Journal of Proteome Research*, 10(3):1126–1138.
- Bradford, M. M. 1976. a Rapid and Sensitive Method for the Quantification of Microgram Quantities of Protein Utilizing the Principle of Protein-Dye Binding. *Analytical Biochemistry*, 72: 248-254.
- Brunelle, J. L., and R. Green. 2014. One-dimensional SDS-polycrylamide gel electrophoresis (1D SDS-PAGE). In *methods in Enzymology*. Academic press, 541: 151-159.

- _____. 2014. Commasie blue staining. In *methods in Enzymology*. Academic Press, 541:161-167.
- BSN. 2023. SNI 4869-3:2023. Semen beku-Bagian 3: Kambing dan Domba. Badan Standarisasi Nasional.
- Butar, E. K. B. 2009. Efektivitas Frekuensi Exercise terhadap peningkatan kualitas semen sapi Simmental. Skripsi. Universitas Sumatera Utara. Medan.
- Byrne, K., T. Leahy, R. McCulloch, M. L. Colgrave, and M. K. Hollad. 2012. Comprehensive mapping of the bull sperm surface proteome. *Proteomics*, 12 (23-24): 3559-3579.
- Centola, G. M. 2014. Semen assessment. *Urologic Clinics of North America*.
- Cheema, R. S., A. K. Bansal, M. Patel, and V. K. Gandotra. 2016. Purification and characterization of heparin binding proteins from seminal plasma of cross-bred cattle bulls by affinity chromatography, SDS-PAGE and mass spectrometry. *Journal of Proteomics and Enzymology*, 5(1): 1-7.
- Cohen, J. 1988. Statistical power analysis for the behavioral sciences. 2nd ed. Lawrence Erlbaum Associates.
- Costa, B. B. D., L. S. Marques, P. G. Lassen, R. B. Rodrigues, and D. P. Streit. 2019. Cryopreservation-induced morphological changes in the sperm of south American silver catfish (*Rhamdia quelen*). *Journal of applied Ichthyology*, 35: 1-7.
- Danang, D. R., N. Isnaini, dan P. Trisunuwati. 2012. Pengaruh lama simpan semen terhadap kualitas spermatozoa ayam kampung dalam pengencer Ringer's pada suhu 4°C. *Jurnal Ternak Tropika*, 13(1): 47-57.
- Delgadillo, J. A., B. Leboeuf, and P. Chemineau. 1991. Decrease in the seasonality of sexual behavior and sperm production in bucks by exposure to short photoperiodic cycles. *Theriogenology*, 36:755-770.
- _____. 1992. Abolition of seasonal variations in semen quality and maintenance of sperm fertilizing ability by photoperiodic cycles in goat bucks. *Small Ruminant Research*, 9(1): 47-59.
- Druart, X., and S. de Graaf. 2018. Seminal plasma proteomes and sperm fertility. *Animal Reproduction Science*, 194: 33-40.
- Eser, A., A. Alakus, K. Bagci, C. C. Aslihan, Y. Selin, R. Arici, and K. Demir. 2025. The structural role of A-kinase anchoring protein 4 (AKAP4) in sperm motility and hyperactivation. *Molecular Reproduction and Development*, 92(1): 1-5.
- Fauzan, M., M. Hartono, dan P. E. Santosa. 2014. Pengaruh suhu dan lama thawing di dataran rendah terhadap kualitas semen beku sapi Brahman. *Jurnal Ilmiah Peranakan Terpadu*, 2(3): 1-7.

- Feradis, F. 2010. *Bioteknologi Reproduksi pada Ternak*. Alfabeta. Bandung.
- Finelli, R., K. Leisegang, S. Tumallapalli, R. Henkel, and A. Agarwal. 2021. The validity and reliability of computer-aided semen analyzers in performing semen analysis: A systematic review. *Translational Andrology and Urology*, 10(7): 3069–3079.
- Fonseca, J. F., C. A. A. Torres, V. V. Maffili, A. M. Borges, A. D. F. Santos, M. T. Rodrigues, and R. F. M. Oliveira. 2005. The hypoosmotic swelling test in fresh goat spermatozoa. *Animal Reproduction*, 2(2): 139-144.
- Fraser, L., K. Wasilewska-Sakowska, Ł. Zasiadczyk, E. Piątkowska, and K. Karpiesiuk. 2021. Fractionated seminal plasma of boar ejaculates analyzed by LC–MS/MS: Its effects on post-thaw semen quality. *Genes*. 12(10):15-74.
- Garfin, D. E. 1990. One-dimensional gel electrophoresis. *Methods in Enzymology*, 182: 425–441.
- _____. 2003. *Gel electrophoresis of protein*. Oxford University Press, UK. p.5.
- Garner D. L., dan E. S. E. Hafez. 2000. Spermatozoa and Seminal Plasma. in: Hafez E.S.E (ed). *Reproduction in Farm Animals* 7th Ed. Lippincott Williams & Wilkins, USA.
- Gomes, F. P., R. Park, A. G. Viana, C. Fernandez-Costa, E. Topper, A. Kaya, E. Memili, J. R. Yates III, and A. A. Moura. 2020. Protein signatures of seminal plasma from bulls with contrasting frozen-thawed sperm viability. *Scientific Reports*, 10:14661.
- Guilford, J. P. 1956. *Fundamental statistics in psychology and education*. 3rd McGraw-Hill.
- Hafez, E. S. E. 1993. Artificial insemination. In: *Reproduction in Farm Animals*. 6th Ed. Lea and Febiger, Philadelphia. Pp: 424-439.
- _____. 2000. Semen Evaluation. in: *Reproduction in Farm Animals*. 7th Edition Lippincott Williams and Wilkins Maryland USA.
- Hames, B. D. 1998. *Gel electrophoresis of protein. A practical approach*. 3rd ed. Oxford University Press, New York. p. 1–30.
- Hansen, C., T. J. Luben, J. D. Sacks, A. Olshan, S. Jeffay, L. Strader, and S. D. Perreault. 2010. The Effect of Ambient Air Pollution on Sperm Quality. *Environmental Health Perspectives*, 118(2): 203-209.
- Hardijanto, H., T. Sardjito, T. Hernawati, T. Susilowati dan T. W. Suprayogi. 2008. *Penuntun Praktikum Fisiologi dan Teknologi Reproduksi (IB)*. Fakultas Kedokteran Hewan. Universitas Airlangga. Surabaya. P:8-18.

- Hendri, Jaswandi, R., Indriastuti, and Ananda. 2024. Sperm ki-nematics of Pesisir bull thawed at different temperatures and times. *Buletin Peternakan*, 48(4): 233–241.
- Hijriyanto, M., Dasrul, dan C. N. Thasmi. 2017. Pengaruh frekuensi penampungan semen terhadap kualitas spermatozoa pada ayam Bangkok. *Jurnal Ilmiah Mahasiswa Veteriner*, 01: 46-53.
- Hikmawan, P., T. Susilawati, dan M. N. Ihsan. 2016. Evaluasi volume dan karakteristik makroskopis semen segar kambing Peranakan Etawa (PE) pada umur yang berbeda. *Jurnal Ternak Tropika*, 17(1): 45–48.
- Ismaya. 2014. *Bioteknologi Inseminasi Buatan pada Sapi dan Kerbau*. Gadjah Mada University Press, Yogyakarta.
- Issaq, H. J., and T. D. Veenstra. 2008. Two-Dimensional Polyacrylamide Gel Electrophoresis (2D-PAGE): Advances and Perspectives, *BioTechniques*, 44(5):697-700.
- Jaenudeen, M. R., and E. S. E. Hafez. 2000. Cattle and Buffalo in: B. Hafez and E. S. E. Hafez. (ed). *Reproduction in Farm Animals*, 7th Ed., pp. 159-171. Lippincott Williams and Wilkins.
- Jaswandi, S. Prastowo, R. Widyastuti, and Ananda. 2024. Quality and protein profiles in local Indonesian ran sperm before and after cryopreservation. *International Journal of Veterinary Science*, 13(6): 841-852.
- Kadirvel, G., S. Periasamy, and S. Kumar. 2012. Effect of cryopreservation on apoptotic-like events and its relationship with cryocapacitation of buffalo (*Bubalus bubalis*) sperm. *Reproduction in Domestic Animals*, 47(1): 143-150.
- Kartasudjana, R. 2001. *Teknik Inseminasi Buatan pada Ternak*. Jakarta.
- Karunakaran, M., V. C. Garaje, A Mandal, M. Mondal, S. K. Das, M. K. Ghosh, S. Rai, and R. Behera. 2019. Electrophoretic profile of seminal proteins and their correlation with in vitro sperm characters in Black Bengal buck semen. *Veterinary World*, 12(5):621-628.
- Ku, H. K., H. M. Lim, K. H. Oh, H. J. Yang, J. S. Jeong, and S. K. Kim. 2013. Interpretation of protein quantitation using the *Bradford* assay: comparison with two calculation models. *Analitical Biochemistry*, 434(1): 178-180.
- Kurien, B. T., and R. H. Scofield. 2012. Protein electrophoresis Methods and Protocols. *Methods in Molecular Biology*. Humana Press, Totowa. NJ, pp. 29-35.
- Kwon, W. S., M. S Rahman, J. S Lee, J. Kim, S. J. Yoon, Y. J. Park, Y. A. You, S. Hwang, and M. G. Pang. 2014. A comprehensive proteomic approach to identifying capacitation-related proteins in boar sel sperma. *BMC Genomics*, 15(1):897-899.

- Leboeuf, B. Restall, and S. Salamon. 2000. Production and storage of goat semen for artificial insemination. *Journal of Animal Reproduction sciences*, 62(1-3): 113-141.
- _____. B. V. Furstoss, P. Guillouet, and P. Boue. 2004. Production of artificial insemination doses from Alpine and Saanen bucks under various photoperiodic cycles. *South African Journal of Animal Science*, 34: 230–232.
- _____. J. A. Delgadillo, and E. Manfredi. 2008. Controlling reproduction in selection schemes of dairy goats. *Production of Animal*, 21: 391-402.
- Lestari, S. 2013. Profil kualitas semen sapi pejantan limousine dengan umur yang berbeda di Balai Inseminasi Buatan. Lembang, Jawa Barat. *Jurnal Ilmiah Peternakan*, 1(3): 1165-1172.
- Lintner, K. 2010. Peptide and Protein. Enterprise Technology/Sederma SAS. France.
- Liu, Y., M. Jiang, C. Li, P. Yang, H. Sun, D. Tao, S. Zhang, and Y. Ma. 2011. Human t-complex protein 11 (TCP11), a testis-specific gene product, is a potential determinant of the sperm morphology. *The Tohoku Journal of Experimental Medicine*, 224(2): 111-117.
- Magfira, M., R. I Arifiantini, N. Karja, dan S. Darwati. 2023. Kajian Proteomic dan Fenotipik Pejantan Ayam Kampung Unggul Balitbangtan (KUB) Terhadap Kualitas Semen Segar Dan Semen Beku. Disertasi. Bogor. IPB University.
- Margaryan, H., A. Dorosh, J. Capkova, P. Manskova-Postlerova, A. Philimonenko, P. Hozak, and J. Peknicova. 2015. Characterization and possible function of glyceraldehyde-3-phosphate dehydronase-spermatogenic protein GAPDHS in mammalian sperm. *Reproduction biology and endocrinology*, 13(1):1-15.
- Masrizal, Z. Udin, Hendri, T. Afriani, Jaswandi, and Ananda. 2025. Optimizing equilibration time for enhanced post-thaw quality of Pesisir bull frozen semen. *International Journal of Veterenary Science*, 14(2): 281-288.
- Maurer, H. R. 1971. Disc electrophoresis and related techniques of polyacrylamide gel electrophoresis, 2nd edition. Walter de Gruyter. Berlin.
- Margolis, J., and K. G. Kenrick. 1967. Polyacrylamide gel-electrophoresis across a molecular sieve gradient. *Nature*, 214: 1334-1336.
- Melita, D., D. Dasrul, dan M. Adam. 2014. Pengaruh umur pejantan dan frekuensi ejakulasi terhadap kualitas spermatozoa sapi Aceh. *Jurnal Medika Veterenaria*, 8(1): 15-19.
- Moradpour. 2019. Review on animal semen characteristics: fertility, reproduction and development. *Asian J. Adv. Agric. Res*, 10(2): 1-9.

- Muadz, A., A. Atabany, B. P. Purwanto, dan A. Anggraeni. 2023. Studi Perbedaan Fenotipe Kambing Perah Berdasarkan Analisis Canonical. *Jurnal Ilmiah Indonesia*, 8(7): 5019-5040.
- Mulyono, S. dan B. Sarwono. 2008. *Penggemukan kambing potong*. Penebar Swadaya.
- Nibali, S. C., G. Battiato, X. G. Pappalardo, and V. De Pinto. 2024. Voltage-dependent anion channels in male reproductive cells: Players in healthy fertility *Biomolecules*, 14(10):1-16.
- Noble, J. E., and J. A. Baliley. 2009. Quantitation of protein. *Methods Enzymol*, 463: 73-95
- Ningrum, S. P., M. Hartono, dan P. E. Santosa. 2014. Pengaruh suhu dan lama thawing di dataran tinggi terhadap kualitas semen beku sapi Brahman. *Jurnal Ilmiah Peternakan Terpadu*, 2(3): 103-107 Press. Surabaya.
- Nofa, Y., N. W. K. Karja dan R. I. Arifiantini. 2017. Status Akrosom dan Kualitas Post Thawed Spermatozoa pada Beberapa Rumpun Sapi dari Dua Balai Inseminasi Buatan. *Acta Veterinaria Indonesia*, 5(2): 81-88.
- Nugroho, S. 2005. *Panduan Praktis Statistik Nonparametrik dan Parametrik: Analisis Korelasi Pearson Manual*. Jakarta: Penerbit Ghalia Indonesia.
- O'Flaherty, C. 2014. Peroxidoxins: Hidden players in the antioxidant defence of human spermatozoa. *Basic and Clinical Andrologi*. Biomed Central Ltd.
- Partodihardjo, S. 1992. *Ilmu Reproduksi Hewan*. Penerbit Mutiara, Cet. Ke-3. Jakarta.
- Peris-Frau, P., I. Sánchez-Ajofrín, A. Martín Maestro, C. Maside, D. A. Medina-Chávez, O. García-Álvarez, and A. J. Soler. 2021. Impact of cryopreservation on motile subpopulations and tyrosine-phosphorylated regions of ram spermatozoa during capacitating conditions. *Biology*, 10(11).
- Rahman, M., W. Kwon, and M. Pang. 2017. Prediction of male fertility using capacitation-associated proteins in sel sperma. *Molelucar Reproduction and Development*, 84(9): 749-759.
- Rajamanickam, G. D., J. P. Kastelic, and J. C. Thundathil. 2017. Content of testis-specific isoform of Na/K-ATPase (ATP1A4) is increased during bovine sperm capacitation through translation in mitochondrial ribosomes. *Cell and Tissue Research*, 368(1): 187-200.
- Rego, J. P. A., J. M. Martins, C. A. Wolf, M. V. Tilburg, F. Moreno, A. C. Monteiro-Moreira, R. A. Moreira, D. O. Santos, and A. A. Moura. 2016. Proteomic analysis of seminal plasma and sperm cells and their associations with semen freezability in Guzerat bulls. *Journal of Animal science*, 94(12): 5308-5320.

- Rizal, M., dan Herdis. 2008. Penerapan teknologi inseminasi buatan untuk pelestarian sumber daya ternak kerbau belang. Disertasi. Fakultas Pascasarjana Institut Pertanian Bogor. Bogor.
- Rosyada, Z. N. A., B. P. Pardede, E. M. Kaiin, M. Gunawan, M. Maulana, T. Said, and B. Purwantara. 2023. A proteomic approach to identifying spermatozoa proteins in Indonesian native Madura bulls. *Frontiers in Veterinary Science*, 10.
- Roy, S., and V. Kumar. 2014. A practical approach on SDS PAGE for separation of protein. *International Journal of Science and Research*, 3(8): 955-960.
- Ryu, D. Y., W. H. Song, W. K. Pang, S. J. Yoon, M. S. Rahman, and M. G. Pang. 2019. Freezability biomarkers in bull epididymal spermatozoa. *Scientific Reports*, 9(1):1-11.
- Salmah, N., A. L. Toleng, M. Yusuf, Masturi, Sahiruddin, Hasrin, and U. Masir. 2021. Motility, Viability, and Abnormality of the Frozen Bali Bull Semen with Andromed and Egg Yolk-Tris Extender. *Hasanuddin Journal of Animal Science*, 3(1), 8–14.
- Samsudewa, D., dan A. Suryawijaya. 2008. Pengaruh berbagai pengencer terhadap kualitas semen segar kambing Peranakan Etawa. Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner.
- Setiawan, T. 2011. *Budidaya dan Panduan Lapangan Ternak Kambing Peranakan Etawa (PE)*. Jakarta: Penebar Swadaya.
- Shi, L., Y. Ren, H. Zou, G. Hou, W. Xun, W. Yeu, C. Zhang, and R. Yang. 2014. Effect of rapid freezing-thawing techniques on the sperm parameters and ultrastructure of Chinese Taihang black goat spermatozoa. *Micron*, 57(1): 6-12.
- Singh, I., and A. K. Balhara. 2016. New approaches in buffalo artificial insemination program with special reference to India. *Theriogenology*, 86(10): 194-199.
- Sopiyana, S., S. Iskandar, T. Susanti, dan D. Yogaswara. 2006. Pengaruh krioprotektan DMA, DMF, dan gliserol pada proses pembekuan semen ayam kampung. Dalam *Prosiding Seminar Nasional Teknologi Peternakan dan Veteriner*, 2(1): 704-710. Pusat Penelitian dan Pengembangan Peternakan.
- Souhoka, D. F., M. J. Matatula, W. M. Mesang-Nalley, dan M. Rizal. 2009. Laktosa mempertahankan daya hidup spermatozoa kambing peranakan etawah yang dipreservasi dengan plasma semen domba priangan. *Jurnal Veteriner*, 10: 135-142.
- Steinberg, T. H. 2009. Protein gel staining methods: an introduction and overview. *Methods Enzymol*, 463: 541–563.
- Subandriyo. 1995. *Kambing Peranakan Etawa*. Penebar Swadaya: Jakarta.

- Sujoko, H., M. A. Setiadi, dan Boediono. 2009. Seleksi sel sperma domba Garut dengan metode sentrifugasi gradien densitas Percoll. *Jurnal Veteriner*, 10(3): 125-132.
- Susilawati, T. 2011. *Spermatology*. Universitas Brawijaya Press. Malang.
- Susilowati, S., R. Rimayanti, I. Mustofa, T. Hernawati, and E. Safitri. 2023. Protein identification of seminal plasma in Bali bull (*Bos Javanicus*). *Veterinary Medicine International*, 13(3), 1-12.
- Sutama, I. K., R. Dharsana, B. Setiadi, U. Adiati, R. S. G. Sianturi, I. G. M. Budiarsana, Hartono dan A. Anggraeni. 2000. Respon Fisiologi dan Produktivitas Kambing Peranakan Etawa yang Dikawinkan dengan Kambing Saanen. Buku II. Penelitian Ternak Ruminansia Kecil. pp. 49-63.
- Tambing, S. N., I. K. Sutama, dan R. I. Arifiantini. 2000. Karakteristik dan volume semen segar kambing Peranakan Etawa (PE). *Jurnal Ilmu Ternak dan Veteriner*, 5(2), 89-95.
- Toelihere, M. R. 1985. Fisiologi Reproduksi pada Ternak. Penerbit Angkasa. Bandung.
- _____. 1993. Inseminasi buatan pada ternak. Angkasa. Bandung.
- Tsvetkov, T., and D. Daskalova. 2023. Effect of seminal plasma protein fractions on cooled dog semen kinetics. *Macedonian Veterinary Review*, 46(2): 177-183.
- Upadhyay, V. R., V. Ramesh, R. K. Dewry, G. Kumar, K. Raval, and P. Patoliya. 2021. Implications of cryopreservation on structural and functional attributes of bovine spermatozoa: an overview. *Andrologia*. John Wiley and Sons Inc.
- Vasudevan, D. M. S., and K. Vaidyanathan. 2017. Protein: Structure and Function. In: textbook of Biochemistry for Medical Student. Ed ke-8. New Delhi: Jaypee Brothers Medical Publishers, 1(4): 41-61.
- Villemure M., C. Lazure, and P. Manjunath. 2003. Isolation and characterization of gelatin-binding proteins from goat seminal plasma, *Reproductive Biology and Endocrinology*, 1: 39-45.
- Wahyuningsih, S., N. Ducha, T. Susilawati, dan Aulanni'am. 2013. Motilitas dan viabilitas spermatozoa sapi Limosin selama penyimpanan pada refrigerator dalam pengencer CEP-2 dengan suplementasi kuning telur. *Jurnal Kedokteran Hewan*, 7(10): 5-8.
- Walker, J. M. 2002. The protein protocol handbook. 2nd ed. Humana Press Inc., New Jersey.
- Xu, B., R. Wang, Z. Wang, H. Liu, W. Zhang, Z. Liu, and J. Zhang. 2022. Evaluation of lipidomic change in goat sperm after cryopreservation. *Frontiers in Veterinary Science*, 9: 1-11.

- Yusuf, T. L., dan R. I. Arifiantini. 2006. Keberhasilan menggunakan tiga bahan pengencer dalam dua jenis kemasan pada proses pembekuan semen sapi Frisien Holstein. *Majalah Ilmiah Peternakan*, 9(3): 89-93.
- Zang, S., S. Zou, X. Chen, B. Pan, A. Ning, J. Qin, Y. Wei, and G. Zhou. 2024. Abnormalities in mitochondrial energy metabolism induces by cryopreservation negatively affect goat sperm motility. *Frontiers in Veterinary Science*, 11.
- Zhang, X. 2018. Effect of different cryoprotectants combination on sperm survival, fertility and embryo development in Amur Sturgeon (*Acipenser Schrenckii*). *Animal and Veterinary Sciences*, 6(4): 51-57.

