REFERENCES

Alawiyah, D. dan M. Hartono. 2006. Pengaruh Penambahan Vitamin E dalam Bahan Pengencer Sitrat Kuning Telur Terhadap Kualitas Semen Beku Kambing Boer. J. Indon. Trop. Anim. Agric. 31(1): 8-14.

Almeida, J. and Ball, B. A. 2005. Effect of α-tocopherol and tocopherol succinate on lipid peroxidation in equine spermatozoa. *Animal reproduction science*. *87*(3-4): 321-337.

Appell, R. A. and Evans, P. R. 1977. The effect of temperature on sperm motility and viability. *Fertility and sterility*. *28*(12): 1329-1332.

Argawal, A., G. Virk, C. Ong. and S.S.d.Plessis. 2014. Effect of Oxidative Stress on Male Reproduction. World J Mens Health. 32(1): 1-17.

Badan Pusat Statistik. 2019. Populasi Domba menurut Provinsi, 2009-2018. //www.bps.go.id/dynamictable/2015/12/17/1024/populasi-domba-menurut-provinsi-2009-2016.html. [14 May 2019].

Breiningrer, E., N.B. Beorlagui, C.M. O'Flaherty, and M.T. Beconi. 2004. Alpha-tocopherol improves biochemical and dynamic parameters in cryopreserved boar semen. J.elsvhier. 63(2005): 2126-2135.

Chatterjee, S., & Gagnon, C. 2001. Production of reactive oxygen species by spermatozoa undergoing cooling, freezing, and thawing. *Molecular Reproduction and Development: Incorporating Gamete Research 59*(4): 451-458.

Chung, S., M. Ghelfi, J. Atkinson, R. Parker, J. Qian, C. Carlin and D. Mannor. 2016. Vitamin E and Phospoinositides Regulate the Intracellular Localization of the Hepatic α-Tocopherol Transer Protein. The Journal of Biological Chemistry. 291(33): 17028-17039.

Combs, F.G. 1992. The Vitamins: Fundamental Aspects in Nutrition and Health. Academic Press Inc. New York.

DEMiR, K., ÖZTÜRK, G. B., CİRİT, Ü. and Bozkurt, H. H. 2015. Effects of cooling rate on membrane integrity and motility parameters of cryopreserved ram spermatozoa. *Kafkas Univ Vet Fak Derg*. *21*(1): 61-67.

Direktorat Jenderal Peternakan. 2000. Prosedur Tetap (PROTAP) Produksi dan Distribusi Semen Beku. Departemen Pertanian Direktort Jenderal Peternakan. Jakarta. 40-47.

Direktorat Jenderal Peternakan dan Kesehatan Hewan Kementrian Pertanian. 2017. Livestock and Animal Health Statistics 2017. Direktorat Jenderal Peternakan dan Kesehatan Hewan Kementrian Pertanian Republik Indonesia. 3-5.

Guthrie, H.D. and G.R. Welch. 2012. Effects of reactive oxygen species on sperm function. Theriogenology. 78(2012) : 1700-1708.

Fanaei, H., Keshtgar, S., Bahmanpour, S., Ghannadi, A. and Kazeroni, M. 2011. Beneficial effects of α-tocopherol against intracellular calcium overload in human sperm. *Reproductive Sciences*. 18(10): 978-982.

Feradis. 2007. Karakteristik Sifat Fisik Semen Domba St. Croix. Jurnal Peternakan. 4(1): 1-5.

Ford, W.C.L. 2004. Regulation of spem function by reactive oxygen species. Human reproduction update. 10(5): 387-399.

Freitas, M. L., Bouéres, C. S., Pignataro, T. A., de Oliveira, F. J. G., de Oliveira Viu, M. A. and de Oliveira, R. A. 2016. Quality of fresh, cooled, and frozen semen from stallions supplemented with antioxidants and fatty acids. *Journal of Equine Veterinary Science*. *46*: 1-6.

Hafez, E.S.E. 2000. Reproductive in Farm Animal. 7th Ed. Lea Febriger. Philadelphia 96-172.

Hajibabaei, K. 2016. Antioxidant properties of vitamin E. *Annals of Research in Antioxidants*, 1(2): e22.

Halliwell B and D.Sc. Saramento. 1991. Reactive Oxygen Species in Living Systems: Source, Biochemistry, and Role in Human Disease. The American Journal of Medicine. 91(suppl 3C): 3C14S-3C22S.

Hardijanto, S. Susilowati, T. Hernawati, T. Sardjito, dan T.W. Suprayogi. 2010. Buku Ajar Inseminasi Buatan. 1st Ed. Pusat Penerbitan dan Percetakan Unair (AUP). 75-91.

Herdis, I. Kusuma dan I.W. A. Darmawan. 2009. Pengaruh Penambahan α-tokoferol pada Media Pengencer Tris Kuning Telur terhadap Kualitas Semen Cair Domba Garut. Jurnal Sains dan Teknologi Indonesia. 11(3): 175-180.

Herdis, I.W.A Darmawan, dan M. Rizal. 2016. Penambahan Beberapa Jenis Gula dapat Meningkatkan Kualitas Spermatozoa Beku Asal Epidimis Ternak Domba. Jurnal Kedokteran Hewan. 10(2): 200-204.

Homa, S.T., W. Vassey, A.P. Miranda, T. Riyait and A. Argawal. 2015. Reactive Oxygen Species (ROS) in human semen: determination of a reference range. J. Assist Reprod Genet. 32: 757-764.

Ismudiono, P. Srianto, H. Anwar, S.P. Madyawati, A. Samik dan E. Safitri. 2010. Buku Ajar Fisiologi Reproduksi pada Ternak. 1st Ed. Pusat Penerbitan dan Percetakan (AUP). 11-17.

Jeong, Y.J., M.K. Kim, H.J. Song, E.J. Kang, S.A. Ock.B.M. Kumar, S. Balasubramanian and G.J. Rho. 2008. Effect of alpha-tocopherol

supplementation during boar semen cryopreservation on sperm characteristcs and expression of apoptosis related genes. Cryobiology. 58(2009): 181-189.

Krinsky, N. 1992. Mechanism of Action of Biological Antioxidant. Proc Soc Exp Biol Med. 200.

Kusriningrum, R.S. 2008. Perancangan Percobaan. 1st Ed. Airlangga University Press (AUP). Surabaya. 11-86.

Labetubun, J. dan I.P. Siwa. 2011. Kualitas Spermatozoa Epididimis Sapi Bali dengan Penambahan Laktosa atau Maltosa yang Dipreservasi pada Suhu 3-5^0C. Jurnal Veteriner September 2011. 12(3): 200-207.

Matabane, M. B., Thomas, R., Netshirovha, T. R., Tsatsimpe, M., Ng'ambi, J. W., Nephawe, K. A. and Nedambale, T. L. 2017. Relationship between sperm plasma membrane integrity and morphology and fertility following artificial insemination. *South African Journal of Animal Science*. *47*(1): 102-106.

Mayes, P.A. 1995. Struktur dan Fungsi Vitamin yang Larut dalam Lemak. *In* Biokimia Harper. Penerbit Buku Kedokteran. 681-691.

Monteiro, G. A., Freitas-Dell'Aqua, C. P., Guasti, P. N., Dell'Aqua Jr, J. A., Alvarenga, M. A., Landim, F. C. and Papa, F. O. 2013. Comparison of apoptotic cells between cryopreserved ejaculated sperm and epididymal sperm in stallions. *Journal of equine veterinary science*. 33(7): 552-556.

Motemani, M., Chamani, M., Sharafi, M. and Masoudi, R. 2017. Alpha-tocopherol improves frozen-thawed sperm quality by reducing hydrogen peroxide during cryopreservation of bull semen. *Spanish journal of agricultural research*. *15*(1): 15.

Mumu, M.I. 2009. Viabilitas Semen Sapi Semen yang Dibekukan Menggunakan Krioprotektan *Gliserol*. J. Agroland. 16(2): 172-179.

Ministry of Agriculture. RI. 2012. Keputusan Menteri Pertanian Nomor 2389/Kpts/LB.430/8/2012/. Direktorat Perbibitan dan Produksi Ternak. Jakarta.

Nelore bulls from puberty to sexual maturity. *Arquivo Brasileiro de Medicina Veterinária e Zootecnia*. *68*(3): 620-628.

Nuryadi. 2014. Ilmu Reproduksi Ternak. 1st Ed. Universitas Brawijaya Press (UB Press). 42-46.

Nur, Z. E. K. A. R. I. Y. A., Dogan, I., Gunay, U. and Soylu, M. K. 2005. Relationships between sperm membrane integrity and other semen quality characteristics of the semen of saanen goat bucks. *Bulletin of the Veterinary Institute in Pulawy*. *49*: 183-187.

Perez-Osorio, J., Mello, F., Juliani, G., Lagares, M., Lago, L. and Henry, M. 2008. Effect on post-thaw viability of equine sperm using stepwise addition of

dimethyl formamide and varying cooling and freezing procedures. *Anim Reprod*. *5*(3/4): 103-109.

Purbowati, E. 2009. Usaha Penggemukan Domba. Penerbit Penebar Swadya. 67-69.

Priyanto, L., R.I. Arifiantini dan T.L. Yusuf. 2015. Deteksi Kerusakan DNA Spermatozoa Semen Segar dan Semen Beku Sapi Menggunakan Pewarnaan *Toulidine Blue*. J. Veteriner. 16(1): 48-55.

Ratnani, H., M.N. Ihsan, G. Ciptadi and S. Suyadi. 2018. Effect of alpha-tocopherol supplementation in the extender on the sperm quality of Maduran bull before and after quick freezing. Int. J. Adv. Res. 5(7): 1378-1389.

Reis, L. S. L. S., Ramos, A. A., Camargos, A. S. and Oba, E. 2016. Integrity of the plasma membrane, the acrosomal membrane, and the mitochondrial membrane potential of sperm in Nelore bulls from puberty to sexual maturity. *Arquivo Brasileiro de Medicina Veterinária e Zootecnia*. *68*(3): 620-628.

Sabeti, P., Pourmasumi, S., Rahiminia, T., Akyash, F. and Talebi, A. R. 2016. Etiologies of sperm oxidative stress. *International Journal of Reproductive Biomedicine*. *14*(4): 231.

Salucci, S., P. Ambrogini, D. Lattanzi, A. Minelli, E. Falcieri and P. Gobbi. 2015. Alfa-tocopherol supplementation morphological changes in the hippocampus of adult offspring. Italian Journal of Anatomy and Embriology (IJAE). 120(Abstract) : 170.

Sanocka, D. and M. Kurpisz. 2004. Reactive oxygen species and sperm cells. Reproductive Biology and Endocrinology. 2(12): 1-7.

Santos, G. F., Henry, M., Sampaio, I. B. M. and Gastal, E. L. 1995. Effect of cooling system and rate of cooling on sperm quality of donkey semen preserved at 5° C. *Biology of Reproduction*, *52*(monograph_series1): 761-767.

Singh, K.V., L.A. Beattie and T.M. Sheed. 2013. Vitamin E: tocopherols and tocotrienols radiation countermeasures. Journal of Radiation Research. 54: 973-988.

Solihati, N., S.D. Rasad, R. Setiawan dan S. Nurjanah. 2018. Pengaruh Kadar Gliserol Terhadap Kualitas Domba Lokal. J. Biodjati. 3(1): 63-71.

Srianto, P., N. Dahnia, A. Samik dan H. Santoyo. 2011. Motilitas, Persentase Hidup dan Keutuhan Membran Spermatozoa Domba Ekor Gemuk *Post Thawing* dalam Tiga Macam Diluter. Veterineria Medika. 4(3): 175-180.

Sujoko, H., M.A. Setiadi dan A. Boediono. 2009. Seleksi Spermatozoa Domba Garut dengan Metode Sentrifugasi *Gradien Densitas Percoll*. J. Veteriner. 10(3): 125-132.

Susilowati, S., Hardijanto, T.W. Suprayogi, T. Sardjito dan T. Hernawati. 2010. Penuntun Praktikum Inseminasi Buatan. 1st Ed. Pusat Penerbitan dan Percetakan Unair (AUP). 11-33.

Tremellen, K. 2008. Oxidative stress and male infertility – a clinical perspective.Human Reproduction Update. 14(3): 243-258.

Varisli, O., Scott, H., Agca, C. and Agca, Y. 2013. The effects of cooling rates and type of freezing extenders on cryosurvival of rat sperm. *Cryobiology*. 67(2): 109-116.

Watson, P. F. 2000. The causes of reduced fertility with cryopreserved semen. *Animal reproduction science*. 60: 481-492.

Yamauchi, R. 1997. Vitamin E: Mechanism of its antioxidant activity. *Food Science and Technology International, Tokyo*. *3*(4): 301-309.

Widjaya, N. 2011. Pengaruh Pemberian Susu Skim dengan Pengencer Tris Kuning Telur terhadap Daya Tahan Hidup Spermatozoa Sapi pada Suhu Penyimpanan 5^0C. Sains Peternakan. 9(2): 72-76.

Wijaya, A. 1996. Radikal Bebas dan Parameter Status Oksidan. Forum Diagnosticum No.1. Laboratorium Klinik Prodia.