UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abbasihormozi, S., Kouhkan, A., Shahverdi, A., Gilani, M.A.S., Babapour, V., Naslji, A.N., Akbarinehad, V. and Alizadeh, A., 2023. Nuclear Factor Kappa-B Protein Levels in Sperm of Obese Men with and without Diabetes; Cellular Approach in Male Infertility. *Cell Journal (Yakhteh)*, *25*(1), p.17.

Andreu-Noguera, J., López-Botella, A., Sáez-Espinosa, P. and Gómez-Torres, M.J., 2023. Epigenetics Role in Spermatozoa Function: Implications in Health and Evolution—An Overview. *Life*, *13*(2), p.364.

Al-Khayri, J.M., Sahana, G.R., Nagella, P., Joseph, B.V., Alessa, F.M. and Al-Mssallem, M.Q., 2022. Flavonoids as potential anti-inflammatory molecules: A review. *Molecules*, *27*(9), p.2901.

Alrizaldi, A., Aisyah, R. and Jatmiko, S.W., 2021. The Effect of Coffee on The Quantity of Spermatozoa of Diabetic Wistar Rats Inducted By Aloxan. *Herb-Medicine Journal: Terbitan Berkala Ilmiah Herbal, Kedokteran dan Kesehatan*, *4*(2), pp.11-22.

Arvilla, F., 2021. Kebar Grass Extract (Biophitum Petersianum) Increases Diameter Of The Seminiferous Tubules Of Diabetic Mice. *Saintika Medika*, *17*(1), pp.41-48.

American Diabetes Association, 2021. 2. Classification and diagnosis of diabetes: standards of medical care in diabetes—2021. *Diabetes care*, *44*(Supplement_1), pp.S15-S33.

Anggraini, A., 2020. Manfaat Antioksidan Daun Salam Terhadap Kadar Glukosa Darah dan Penurunan Apoptosis Neuron di Hippocampus Otak Tikus yang Mengalami Diabetes. *Jurnal Medika Hutama*, *2*(01 Oktober), pp.349-355.

Akella, N.M., Ciraku, L. and Reginato, M.J., 2019. Fueling the fire: emerging role of the hexosamine biosynthetic pathway in cancer. *BMC biology*, *17*(1), pp.1-14.

Adana, M.Y., Akang, E.N., Peter, A.I., Jegede, A.I., Naidu, E.C.S., Tiloke, C., Chuturgoon, A.A. and Azu, O.O., 2018. Naringenin attenuates highly active antiretroviral therapy-induced sperm DNA fragmentations and testicular toxicity in Sprague-Dawley rats. *Andrology*, *6*(1), pp.166-175.

Aksu, E.H., Kandemir, F.M., Özkaraca, M., Ömür, A.D., Küçükler, S. and Çomaklı, S., 2017. Rutin ameliorates cisplatin-induced reproductive damage via suppression of oxidative stress and apoptosis in adult male rats. *Andrologia*, *49*(1), p.e12593.

AbdEl-Moniem, M., Mustafa, H.N., Megahed, H.A., Agaibyi, M.H., Hegazy, G.A. and El-Dabaa, M.A., 2015. The ameliorative potential of Hyphaene thebaica on streptozotocin-induced diabetic nephropathy. *Folia Morphologica*, *74*(4), pp.447-457.

Aisen, M.L., 2013. Neurological rehabilitation: sexuality and reproductive health. *Handbook of Clinical Neurology*, *110*, pp.229-237.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Auwal, M., Sanda, K., Mairiga, I., Lawan, F., Mutah, A., Tijjani, A., Shuaibu, A., Ibrahim, A., Njobdi, A. and Thaluvwa, A., 2013. The phytochemical, elemental and hematologic evaluation of crude mesocarp extract of Hyphaene thebaica (doumpalm) in wistar albino rats. *Asian J. Biochem*, *8*(1), pp.14-23

Atkinson, M.A., Bluestone, J.A., Eisenbarth, G.S., Hebrok, M., Herold, K.C., Accili, D., Pietropaolo, M., Arvan, P.R., Von Herrath, M., Markel, D.S. and Rhodes, C.J., 2011. How does type 1 diabetes develop? The notion of homicide or β-cell suicide revisited. *Diabetes*, *60*(5), pp.1370-1379.

American Diabetes Association, 2010. Diagnosis and classification of diabetes mellitus. *Diabetes care*, *33*(Supplement_1), pp.S62-S69.

Boroujeni, S.N., Malamiri, F.A., Bossaghzadeh, F., Esmaeili, A. and Moudi, E., 2022. The most important medicinal plants affecting sperm and testosterone production: A systematic review. *JBRA assisted reproduction*, *26*(3), p.522.

Banday, M.Z., Sameer, A.S. and Nissar, S., 2020. Pathophysiology of diabetes: An overview. *Avicenna journal of medicine*, *10*(04), pp.174-188.

Blumberg, J.B., Camesano, T.A., Cassidy, A., Kris-Etherton, P., Howell, A., Manach, C., Ostertag, L.M., Sies, H., Skulas-Ray, A. and Vita, J.A., 2013. Cranberries and their bioactive constituents in human health. *Advances in nutrition*, *4*(6), pp.618-632.

Brunetti, C., Di Ferdinando, M., Fini, A., Pollastri, S. and Tattini, M., 2013. Flavonoids as antioxidants and developmental regulators: relative significance in plants and humans. *International journal of molecular sciences*, *14*(2), pp.3540-3555.

Bener, A., Al-Ansari, A.A., Zirie, M. and Al-Hamaq, A.O., 2009. Is male fertility associated with type 2 diabetes mellitus?. *International urology and nephrology*, *41*, pp.777-784.

Berger, A., 2000. Th1 and Th2 responses: what are they?. *Bmj*, *321*(7258), p.424.

Breucker, H., Schäfer, E. and Holstein, A.F., 1985. Morphogenesis and fate of the residual body in human spermiogenesis. *Cell and tissue research*, *240*, pp.303-309.

Chairissy, M.D., Wulandari, L.R. and Sujuti, H., 2019. Pro-apoptotic and anti-proliferative effects of Physalis angulata leaf extract on retinoblastoma cells. *International Journal of Ophthalmology*, *12*(9), p.1402.

Chaidir, L., Epi, E.E. and Taofik, A., 2015. Eksplorasi, Identifikasi, Dan Perbanyakan Tanaman Ciplukan (*Physalis angulata* L.) Dengan Menggunakan Metode Generatif Dan Vegetatif. *Jurnal Istek*, *9*(1), p. 82-103.

Dutta, S., Sengupta, P., Slama, P. and Roychoudhury, S., 2021. Oxidative stress, testicular inflammatory pathways, and male reproduction. *International journal of molecular sciences*, *22*(18), p.10043.

Davari, M., Hashemi, R., Mirmiran, P., Hedayati, M., Sahranavard, S., Bahreini, S., Tavakoly, R. and Talaei, B., 2020. Effects of cinnamon supplementation on expression of

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ad.id/

systemic inflammation factors, NF-kB and Sirtuin-1 (SIRT1) in type 2 diabetes: a randomized, double blind, and controlled clinical trial. *Nutrition journal*, *19*(1), pp.1-8.

de Oliveira, A.M., Malunga, L.N., Perussello, C.A., Beta, T. and Ribani, R.H., 2020. Phenolic acids from fruits of Physalis angulata L. in two stages of maturation. *South African Journal of Botany*, *131*, pp.448-453.

Devitria, R., 2020. Uji Aktivitas Antioksidan Ekstrak Metanol Daun Ciplukan menggunakan Metode 2, 2-Diphenyl 1-Picrylhydrazyl (DPPH). *Jurnal Penelitian Farmasi Indonesia*, *9*(1), pp.31-36.

Dinda, B., Dinda, S., DasSharma, S., Banik, R., Chakraborty, A. and Dinda, M., 2017. Therapeutic potentials of baicalin and its aglycone, baicalein against inflammatory disorders. *European journal of medicinal chemistry*, *131*, pp.68-80.

Dina, M.S. and Dasrul, D., 2017. Penurunan Jumlah Sel Leydig Dan Sel Sertoli Tikus Putih (*Rattus Norvegicus*) Strain Wistar Setelah Pemberian Formalin (Decrease On The Number Of Leydig And Sertoli Cells In Rats (*Rattus Norvegicus*) Wistar Strain After Formaldehyde Administration). *Jurnal Ilmiah Mahasiswa Veteriner*, *1*(2), pp. 204-209.

Dai, X., Ding, Y., Zhang, Z., Cai, X. and Li, Y., 2013. Quercetin and quercitrin protect against cytokine-induced injuries in RINm5F β-cells via the mitochondrial pathway and NF-κB signaling. *International journal of molecular medicine*, *31*(1), pp.265-271

Dalimartha, S., 2004. Ramuan Tradisional untuk Pengobatan Diabetes melitus, Dalam: Buku Ajar Fitokimia.

Fadhli, H., Ruska, S.L., Furi, M., Suhery, W.N., Susanti, E. and Nasution, M.R., 2023. Ciplukan (Physalis angulata L.): Review Tanaman Liar yang Berpotensi Sebagai Tanaman Obat. *JFIOnline| Print ISSN 1412-1107| e-ISSN 2355-696X*, *15*(2), pp.134-141.

Fadli, F. And Subakti, R.J., 2021. Tingkat Pengetahuan Masyarakat Desa Gandis Hulu Kecamatan Dedai Kabupaten Sintang Terhadap Tumbuhan Ciplukan (Physalis Angulata L.) dan Manfaatnya Sebagai Anti Diabetes. *Jurnal Komunitas Farmasi Nasional*, *1*(1), Pp.38-46.

Fitri, N.L., Susetyarini, E. and Waluyo, L., 2016. The effect of ciplukan (Physalis angulata l.) fruit extract on SGPT and SGOT levels against white male mice (Mus musculus) hyperglycemia induced by alloxan as biology learning resources. *Jurnal Pendidikan Biologi Indonesia*, *2*(2), pp.180-187.

Fatimah, R.N., 2015. Diabetes melitus tipe 2. *Jurnal Majority*, *4*(5). pp. 93-101.

Federer, W.T., Powers, L. and Payne, M.G., 1963. Studies on statistical procedures applied to chemical genetic data from sugar beets.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Frances, D.E.A., Ingaramo, P.I., Ronco, M.T. and Carnovale, C.E., 2013. Diabetes, an inflammatory process: oxidative stress and TNF-alpha involved in hepatic complication.

Gurung, P.E Yetiskul, & I. Jialal. 2021. "Physiology, male Reproductive System". Diakses melalui https://www.ncbi.nlm.nih.gov/books/NBK538429/.

Gilani, S.J., Bin-Jumah, M.N., Al-Abbasi, F.A., Nadeem, M.S., Afzal, M., Sayyed, N. and Kazmi, I., 2021. Fustin ameliorates hyperglycemia in streptozotocin induced type-2 diabetes via modulating glutathione/Superoxide dismutase/Catalase expressions, suppress lipid peroxidation and regulates histopathological changes. *Saudi Journal of Biological Sciences*, *28*(12), pp.6963-6971.

Griswold, M.D., 2018. 50 years of spermatogenesis: Sertoli cells and their interactions with germ cells. *Biology of Reproduction*, *99*(1), pp.87-100.

George, G.S., Opuene, E. and Onuoha, E.A., 2014. Male hyperglycemic-induced infertility: an integration of some biochemical factors. *European Journal of Biology and Medical Science Research*, *2*(4), pp.78-84.

Giacco, F., Brownlee, M., 2011. Oxidative Stress and Diabetic Complications. Circ Res 107, 1058–1070.

Geraldes, P. and King, G.L., 2010. Activation of protein kinase C isoforms and its impact on diabetic complications. *Circulation research*, *106*(8), pp.1319-1331.

Hasanuddin, A.P., 2023. Analisis Kadar Antioksidan Pada Ekstrak Daun Binahong Hijau (Anredera Cordifolia (Ten.) Steenis). *Bioma: Jurnal Biologi Makassar*, *8*(2), pp.66-74.

Hartono, B.A., Henrina, J. and Turmudzi, D.M., 2023. Diagnostic Challenge of Adult-onset Type 1 Diabetes Mellitus in a Remote Hospital. *Majalah Kedokteran Bandung*, *55*(2), pp.124-130.

Horvath-Pereira, B.D.O., Almeida, G.H.D.R., Silva Júnior, L.N.D., do Nascimento, P.G., Horvath Pereira, B.D.O., Fireman, J.V.B.T., Pereira, M.L.D.R.F., Carreira, A.C.O. and Miglino, M.A., 2023. Biomaterials for Testicular Bioengineering: How far have we come and where do we have to go?. *Frontiers in Endocrinology*, *14*, p.1085872

He, Z., Yin, G., Li, Q.Q., Zeng, Q. and Duan, J., 2021. Diabetes mellitus causes male reproductive dysfunction: a review of the evidence and mechanisms. *in vivo*, *35*(5), pp.2503-2511.

Houda, A., Nyaz, S., Sobhy, B.M., Bosilah, A.H., Romeo, M., Michael, J.P. and Eid, H.M., 2021. Seminiferous tubules and spermatogenesis. *Male Reproductive Anatomy*.

Hannoodee, S. and Nasuruddin, D.N., 2020. Acute inflammatory response.

Hidayat, T., Priyandoko, D., Perdana, F.S. and Insan, A.M., 2019, November. Cytotoxicity effects of leaf extracts of Ciplukan (Physalis angulata; Solanaceae) on human blood

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

and ovary cancer cell lines. In *Journal of Physics: Conference Series* (Vol. 1280, No. 2, p. 022009). IOP Publishing.

Husna, F., Suyatna, F.D., Arozal, W. and Purwaningsih, E.H., 2019. Model hewan coba pada penelitian diabetes. *Pharmaceutical Sciences and Research*, *6*(3), p.1.

Hadiyanti, N., 2017. Kerapatan dan Sifat Morfologi Ciplukan (Physalis sp.) di Gunung Kelud, Jawa Timur. *Jurnal Ilmiah Hijau Cendekia*, *2*(2), pp.71-77.

Hasanah, U., 2013. Insulin sebagai Pengatur Kadar Gula Darah. *Jurnal Keluarga Sehat Sejahtera*, *11*(2).

Hess, R.A. and De Franca, L.R., 2009. Spermatogenesis and cycle of the seminiferous epithelium. *Molecular mechanisms in spermatogenesis*, pp.1-15.

Hudson, B.I., Kalea, A.Z., del Mar Arriero, M., Harja, E., Boulanger, E., D'Agati, V. and Schmidt, A.M., 2008. Interaction of the RAGE cytoplasmic domain with diaphanous-1 is required for ligand-stimulated cellular migration through activation of Rac1 and Cdc42. *Journal of Biological Chemistry*, *283*(49), pp.34457-34468.

Hsieh, W.T., Huang, K.Y., Lin, H.Y. and Chung, J.G., 2006. Physalis angulata induced G2/M phase arrest in human breast cancer cells. *Food and Chemical Toxicology*, *44*(7), pp.974-983.

Hedger, M.P. and Meinhardt, A., 2003. Cytokines and the immune-testicular axis. *Journal of reproductive immunology*, *58*(1), pp.1-26.

Hales, D.B., 2002. Testicular macrophage modulation of Leydig cell steroidogenesis. *Journal of reproductive immunology*, *57*(1-2), pp.3-18.

Iwansyah, A.C., Luthfiyanti, R., Ardiansyah, R.C.E., Rahman, N., Andriana, Y. and Abd Hamid, H., 2022. Antidiabetic activity of Physalis angulata L. fruit juice on streptozotocin-induced diabetic rats. *South African Journal of Botany*, *145*, pp.313-319.

Ingle, A.M., Verma, A.K., Tiwari, R., Karthik, K., Chakraborty, S., Deb, R., Rajagunalan, S., Rathore, R. and Dhama, K., 2013. Immunomodulators in day to day life: a review. *Pakistan journal of biological sciences: PJBS*, *16*(17), pp.826-843

Ingaramo, P.I., Ronco, M.T., Francés, D.E., Monti, J.A., Pisani, G.B., Ceballos, M.P., Galleano, M., Carrillo, M.C. and Carnovale, C.E., 2011. Tumor necrosis factor alpha pathways develops liver apoptosis in type 1 diabetes mellitus. *Molecular immunology*, *48*(12-13), pp.1397-1407.

Johnkennedy, N. and Mercy, O.C., 2022. Perspective of Inflammation and Inflammation Markers. *Journal La Medihealtico*, *3*(1), pp.16-26.

Khosravi, Z., Sedaghat, R., Baluchnejadmojarad, T. and Roghani, M., 2019. Diosgenin ameliorates testicular damage in streptozotocin-diabetic rats through attenuation of

PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN
INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

apoptosis, oxidative stress, inflammation. *International immunopharmacology*, *70*, pp.37-46

Kotian, S.R., Kumar, A., Mallik, S.B., Bhat, N.P., Souza, A.D. and Pandey, A.K., 2019. Effect of diabetes on the male reproductive system—A histomorphological study. *Journal of Morphological Sciences*, *36*(01), pp.017-023.

Khourdaji, I., Lee, H. and Smith, R.P., 2018. Frontiers in hormone therapy for male infertility. *Translational andrology and urology*, *7*(Suppl 3), p.S353.

Khorsandi, L., Orazizadeh, M., Moradi-Gharibvand, N., Hemadi, M. and Mansouri, E., 2017. Beneficial effects of quercetin on titanium dioxide nanoparticles induced spermatogenesis defects in mice. *Environmental Science and Pollution Research*, *24*, pp.5595-5606.

Korejo, N.A., Wei, Q.W., Shah, A.H. and Shi, F.X., 2016. Effects of concomitant diabetes mellitus and hyperthyroidism on testicular and epididymal histoarchitecture and steroidogenesis in male animals. *Journal of zhejiang university-science b*, *17*(11), pp.850-863.

Kanakasabapathi, D. and Gopalakrishnan, V.K., 2015. Evaluation of antidiabetic potential of aqueous extract of Passiflora edulis Sims on alloxan induced diabetes mellitus in wistar albino rats. *Int. J. Pharm. Sci. Rev. Res*, *34*(1), pp.171-177.

Kent, T. and Griswold, M.D., 2014. Checking the pulse of vitamin A metabolism and signaling during mammalian spermatogenesis. *Journal of Developmental Biology*, *2*(1), pp.34-49.

Kaur, R., Kaur, J., Mahajan, J., Kumar, R. and Arora, S., 2014. Oxidative stress—implications, source and its prevention. *Environmental Science and Pollution Research*, *21*, pp.1599-1613.

Kalsum U, Ali M, Widodo M, Kalim H. 2013. Effect of methanolic extract of Physalis minima on gastric inflammation and gastric ulcers formation. *J Exp Integr Med,* 3(4) p. 331.

Kianifard, D., Sadrkhanlou, R.A. and Hasanzadeh, S., 2012. The ultrastructural changes of the sertoli and leydig cells following streptozotocin induced diabetes. *Iranian journal of basic medical sciences*, *15*(1), p.623.

Kim, E.K., Kwon, K.B., Song, M.Y., Han, M.J., Lee, J.H., Lee, Y.R., Lee, J.H., Ryu, D.G., Park, B.H. and Park, J.W., 2007. Flavonoids protect against cytokine-induced pancreatic β-cell damage through suppression of nuclear factor κB activation. *Pancreas*, *35*(4), pp.e1-e9.

Karin, M. and Delhase, M., 2000, February. The IκB kinase (IKK) and NF-κB: key elements of proinflammatory signalling. In *Seminars in immunology* (Vol. 12, No. 1, pp. 85-98). Academic Press.

Lotti, F. and Maggi, M., 2023. Effects of Diabetes Mellitus on sperm quality and fertility outcomes: clinical evidence. *Andrology*, *11*(2), pp.399-416.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ad.id/

Lestiariani, L., Djabir, Y.Y. and Rahim, A., 2023. Subacute Toxicity Effects of Physalis Angulata Leaf Extract on Kidneys and Liver of Female Wistar Rats. *Iranian Journal of Toxicology*, *17*(3), pp.19-26.

Laia, I.S., 2022. Pemanfataan Ciplukan (Physalis Angulata) Sebagai Tanaman Obat Hipertensi Di Desa Mohilikecamatan Amandraya Kabupaten Nias Selatan. *Faguru: Jurnal Ilmiah Mahasiswa Keguruan*, *1*(2), Pp.119-127.

Lee, S., Piao, C., Kim, G., Kim, J.Y., Choi, E. and Lee, M., 2018. Production and application of HMGB1 derived recombinant RAGE-antagonist peptide for anti-inflammatory therapy in acute lung injury. *European Journal of Pharmaceutical Sciences*, *114*, pp.275-284.

La Vignera, S., Condorelli, R.A., Di Mauro, M., Lo Presti, D., Mongioì, L.M., Russo, G. and Calogero, A.E., 2015. Reproductive function in male patients with type 1 diabetes mellitus. *Andrology*, *3*(6), pp.1082-1087.

Lefaan, P.N., 2014. Pengaruh infusa rumput kebar (Biophytum petersianum) terhadap spermatogenesis mencit (Mus musculus). *Jurnal Sain Veteriner*, *32*(1), pp.55-67.

Lim, T.K., 2013. Cosmos sulphureus. In *Edible Medicinal And Non-Medicinal Plants: Volume 7, Flowers* (pp. 287-290). Dordrecht: Springer Netherlands.

La Vignera, S., Condorelli, R., Vicari, E., D'Agata, R. and Calogero, A.E., 2012. Diabetes mellitus and sperm parameters. *Journal of andrology*, *33*(2), pp.145-153.

La Vignera, S., Calogero, A.E., Condorelli, R., Lanzafame, F., Giammusso, B. and Vicari, E., 2009. Andrological characterization of the patient with diabetes mellitus. *Minerva endocrinologica*, *34*(1), pp.1-9.

LeRoith, D., Taylor, S.I. and Olefsky, J.M. eds., 2004. *Diabetes mellitus: a fundamental and clinical text*. Lippincott Williams & Wilkins.

Marlindasari, L., Priatni, H.L. And Darotulmutmainnah, A., 2023. Uji Efektivitas Ekstrak Ciplukan (*Physallis angulata*) terhadap Penurunan Kadar Glukosa Darah Pada Tikus Jantan Galur Wistar. *Jurnal Ilmiah Manuntung*, *9*(1), Pp.12-18.

Magliano, D.J., Boyko, E.J. and Atlas, I.D., 2021. What is diabetes?. In *IDF DIABETES ATLAS [Internet]. 10th edition*. International Diabetes Federation.

Malini, D.M., Ratningsih, N., Fitriani, N. And Rahmi, D., 2020. Potensi Regenerasi Sel Sertoli Dan Sel Leydig Tikus (Rattus Norvegicus) Model Diabetes Pasca Pemberian Ekstrak Etanol Kulit Buah Jengkol (Archidendron Pauciflorum). *Jurnal Pro-Life*, *7*(2), Pp.157-170

Maliangkay, H.P., Rumondor, R. and Kantohe, M., 2019. Skrining Fitokimia dan Potensi Antidiabetes Ekstrak Etanol Herba Ciplukan (Physalis Angulata L) pada Tikus Putih (Rattus Novergicus) yang Diinduksi Aloksan. *Bio-Edu: Jurnal Pendidikan Biologi*, *4*(3), pp.98-107.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ad.id/

Mardanshahi, T., Rezaei, N., Zare, Z., Shafaroudi, M.M. and Mohammadi, H., 2019. Effects of L-Carnitine on the sperm parameters disorders, apoptosis of spermatogenic cells and testis histopathology in diabetic Rats. *International Journal of Reproductive BioMedicine*, *17*(5), p.325.

Mahidin, M., Maulana, A.M. and Susiyadi, S., 2018. pengaruh pemberian ekstrak etanol daun kemangi (ocimum basilicum l.) terhadap jumlah sel spermatogenik tikus putih (rattus norvegicus) galur wistar jantan yang diinduksi monosodium glutamaT. *Herb-Medicine Journal: Terbitan Berkala Ilmiah Herbal, Kedokteran dan Kesehatan*, *1*(1).

Mulyati, S., 2016. Peranan Advanced Glycation End-products pada Diabetes. *Cermin Dunia Kedokteran*, *43*(6), pp.422-426.

Ministry of Health (Indonesia). Indonesia Sample Registration System - Deaths 2014.

McLachlan, R.I., Rajpert-De Meyts, E., Hoei-Hansen, C.E., de Kretser, D.M. and Skakkebaek, N.E., 2007. Histological evaluation of the human testis—approaches to optimizing the clinical value of the assessment: mini review. *Human reproduction*, *22*(1), pp.2-16.

Octavyani, G.K., Kuswanti, N. and Khaleyla, F., 2022. Pengaruh Ekstrak Daun Sawo Manila (Manilkara zapota L.) terhadap Jumlah Sel Leydig dan Spermatogenik Mencit Diabetes. *LenteraBio: Berkala Ilmiah Biologi*, *11*(1), pp.113-121.

O'Donnell, L., Stanton, P. and de Kretser, D.M., 2015. Endocrinology of the male reproductive system and spermatogenesis.

Ozougwu, J.C., Obimba, K.C., Belonwu, C.D. and Unakalamba, C.B., 2013. The pathogenesis and pathophysiology of type 1 and type 2 diabetes mellitus. *J Physiol Pathophysiol*, *4*(4), pp.46-57.

Oeckinghaus, A. and Ghosh, S., 2009. The NF-κB family of transcription factors and its regulation. *Cold Spring Harbor perspectives in biology*, *1*(4), p.a000034.

Planas, A., Simó-Servat, O., Hernández, C. and Simó, R., 2022. Advanced glycations end products in the skin as biomarkers of cardiovascular risk in type 2 diabetes. *International Journal of Molecular Sciences*, *23*(11), p.6234.

Panjaitan, R.F. and Manurung, E., 2020. Analisis Faktor Resiko Kejadian Infertilitas Pada Perawat di RSU Sembiring. *BEST Journal (Biology Education, Sains and Technology)*, *3*(2), pp.244-250.

Pratiwi, H., Sabirosi, B.G. and Winarso, D., 2020. Decrease Expression of Tumor Necrosis Factor-Alpha (TNF-α) and Sperm Count Increase in Type 1 Diabetes Mellitus Rat (Rattus norvegicus) Model with Turmeric Rhizome (Curcuma longa L) Extract. In *Journal of Physics: Conference Series* (Vol. 1430, No. 1, p. 012006). IOP Publishing

Panche, A.N., Diwan, A.D. and Chandra, S.R., 2016. Flavonoids: an overview. *Journal of nutritional science*, *5*, p.e47.

PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN
INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Pu, P., Wang, X.A., Salim, M., Zhu, L.H., Wang, L., Xiao, J.F., Deng, W., Shi, H.W., Jiang, H. and Li, H.L., 2012. Baicalein, a natural product, selectively activating AMPKα2 and ameliorates metabolic disorder in diet-induced mice. *Molecular and cellular endocrinology*, *362*(1-2), pp.128-138.

Poli, P.S., 2010. Komunikasi Sel dalam Biologi Molekuler: Jalur Sinyal dan Implikasi Klinis. EGC, Jakarta

Philips, A., Roux, P., Coulon, V., Bellanger, J.M., Vié, A., Vignais, M.L. and Blanchard, J.M., 2000. Differential effect of Rac and Cdc42 on p38 kinase activity and cell cycle progression of nonadherent primary mouse fibroblasts. *Journal of Biological Chemistry*, *275*(8), pp.5911-5917.

Rizal, M. Dicky., 2022. *Potensi Platelet -Rich Plasma untuk Mengatasi Masalah Akibat Stress Oksidatif pada Sistem Reproduksi Pria*. Cetakan 1. Yogyakarta : Gadjah Mada University Press.

Raju, P., Mamidala, E. and Mamidala, E., 2015. Anti-diabetic activity of compound isolated from Physalis angulata fruit extracts in alloxan induced diabetic rats. *The Ame J Sci & Med Res*, *1*(1), pp.40-43.

Roohbakhsh, A., Parhiz, H., Soltani, F., Rezaee, R. and Iranshahi, M., 2015. Molecular mechanisms behind the biological effects of hesperidin and hesperetin for the prevention of cancer and cardiovascular diseases. *Life sciences*, *124*, pp.64-74

R Dias, T., G Alves, M., F Oliveira, P. and M Silva, B., 2014. Natural products as modulators of spermatogenesis: the search for a male contraceptive. *Current Molecular Pharmacology*, *7*(2), pp.154-166.

Ramachandran, A., 2014. Know the signs and symptoms of diabetes. *The Indian journal of medical research*, *140*(5), p.579.

Rains, J.L., Jain, S.K., 2013. Oxidative Stress, Insulin Signaling, and Diabetes. Free Radic Biol Med 50, 567–575

Roy, S., Rahaman, N., Ahmed, F., Metya, S. and Sannigrahi, S., 2013. Naringenin attenuates testicular damage, germ cell death and oxidative stress in streptozotocin induced diabetic rats: naringenin prevents diabetic rat testicular damage. *Journal of Applied Biomedicine*, *11*(3), pp.195-208.

Rauter, A.P., Martins, A., Borges, C., Mota-Filipe, H., Pinto, R., Sepodes, B. and Justino, J., 2010. Antihyperglycaemic and protective effects of flavonoids on streptozotocin–induced diabetic rats. *Phytotherapy Research*, *24*(S2), pp.S133-S138.

Riccioli, A., Starace, D., Galli, R., Fuso, A., Scarpa, S., Palombi, F., De Cesaris, P., Ziparo, E. and Filippini, A., 2006. Sertoli cells initiate testicular innate immune responses through TLR activation. *The Journal of Immunology*, *177*(10), pp.7122-7130.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Sari, L.M., Priatni, H.L. And Darotulmutmainnah, A., 2023. Uji Efektivitas Ekstrak Ciplukan (Physallis Angulata) Terhadap Penurunan Kadar Glukosa Darah Pada Tikus Jantan Galur Wistar. *Jurnal Ilmiah Manuntung*, *9*(1), pp.12-18.

Soegianto, A., Waluyo, B. and Ashari, S., 2020. Preliminary characterization of groundcherry (Physalis angulata) from East Java Province, Indonesia based on morpho-agronomic traits. *Biodiversitas Journal of Biological Diversity*, *21*(2), pp. 759-769.

Sampurna, I.S.R., Rifa'i, M. and Rahayu, S., 2020. The Effectiveness of Combination of Momordica charantia Extract and Averrhoa bilimbi on Nf-Kb Activation in Mice (Mus musculus) Balb/C Hyperglycemia Models. *The Journal of Experimental Life Science*, *10*(1), pp.61-64

Soliman, G.A., Abdel-Rahman, R.F., Ogaly, H.A., Althurwi, H.N., Abd-Elsalam, R.M., Albaqami, F.F. and Abdel-Kader, M.S., 2020. Momordica charantia extract protects against diabetes-related spermatogenic dysfunction in male rats: molecular and biochemical study. *Molecules*, *25*(22), p.5255

Sulistyoningrum, E., Nindyastuti, H. and Putra, A.N., 2012. Infusa Daging Buah Mahkota Dewa Memperbaiki Kerusakan Testis dan Parameter Sperma Tikus Diabetik Mahkota Dewa Mesocarp Infusion Improved Testicular Damage and Sperm Count In Diabetic Rat. *Sains Medika*, *4*(2), pp.115-123

Singh Grewal, A., Bhardwaj, S., Pandita, D., Lather, V. and Singh Sekhon, B., 2016. Updates on aldose reductase inhibitors for management of diabetic complications and non-diabetic diseases. *Mini reviews in medicinal chemistry*, *16*(2), pp.120-162.

Sharma, N., Bano, A., Dhaliwal, H.S. and Sharma, V., 2015. A pharmacological comprehensive review on "Rassbhary" Physalis angulata (L.). *International Journal of Pharmacy and Pharmaceutical Sciences*, *7*(8), pp.34-38.

Susetyarini, E., 2015. Jumlah sel spermiogenesis tikus putih yang diberi tanin daun Beluntas (Pluchea indica) sebagai sumber belajar.

Sukmaningsih, A.S.A., 2014. Penurunan jumlah spermatosit pakiten dan spermatid tubulus seminiferus testis pada mencit (Mus musculus) yang dipaparkan asap rokok.

Sun, S.C., Chang, J.H. and Jin, J., 2013. Regulation of nuclear factor-κB in autoimmunity. *Trends in immunology*, *34*(6), pp.282-289.

Sharma, R. and Agarwal, A., 2011. Spermatogenesis: an overview. *Sperm chromatin: biological and clinical applications in male infertility and assisted reproduction*, pp.19-44.

Sun, S.C., 2011. Non-canonical NF-κB signaling pathway. *Cell research*, *21*(1), pp.71-85.

Sutjiatmo, A.B., Sukandar, E.Y., Ratnawati, Y., Kusmaningati, S., Wulandari, A. and Narvikasari, S., 2011. Efek antidiabetes herba ciplukan (Physalis angulata Linn.) pada mencit diabetes dengan induksi aloksan. *Jurnal Farmasi Indonesia*, *5*(4), pp.166-71.

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Schuppe, H.C. and Meinhardt, A., 2005. Immune privilege and inflammation of the testis. *Immunology of gametes and embryo implantation*, *88*, pp.1-14.

Srinivasan, K., Viswanad, B., Asrat, L., Kaul, C.L. and Ramarao, P., 2005. Combination of high-fat diet-fed and low-dose streptozotocin-treated rat: a model for type 2 diabetes and pharmacological screening. *Pharmacological research*, *52*(4), pp.313-320.

Sunarni, T., 2005. Aktivitas antioksidan penangkap radikal bebas beberapa kecambah dari biji tanaman familia Papilionaceae. *Jurnal Farmasi Indonesia*, *2*(2), pp.53-61

Selvage, D.J. and Rivier, C., 2003. Importance of the paraventricular nucleus of the hypothalamus as a component of a neural pathway between the brain and the testes that modulates testosterone secretion independently of the pituitary. *Endocrinology*, *144*(2), pp.594-598.

Schleicher, E.D. and Weigert, C., 2000. Role of the hexosamine biosynthetic pathway in diabetic nephropathy. *Kidney international*, *58*, pp.S13-S18.

Taguchi, K. and Fukami, K., 2023. RAGE signaling regulates the progression of diabetic complications. *Frontiers in Pharmacology*, *14*, p.1128872.

Temidayo, S.O. and Du Plessis, S.S., 2018. Diabetes mellitus and male infertility. *Asian Pacific journal of reproduction*, *7*(1), pp.6-14.

Tetti, M., 2014. Ekstraksi, pemisahan senyawa, dan identifikasi senyawa aktif. *Jurnal Kesehatan*, *7*(2).

Toshimori K., 2009. Dynamics of the mammalian sperm head: modifcations and maturation events from spermatogenesis to egg activation. *Adv Anat Embryol Cell Biol* , 204:5–94.

Volpe, C.M.O., Villar-Delfino, P.H., Dos Anjos, P.M.F. and Nogueira-Machado, J.A., 2018. Cellular death, reactive oxygen species (ROS) and diabetic complications. *Cell death & disease*, *9*(2), p.119.

Vallabhapurapu, S. and Karin, M., 2009. Regulation and function of NF-κB transcription factors in the immune system. *Annual review of immunology*, *27*, pp.693-733.

Valentovic, M.A., Alejandro, N., Carpenter, A.B., Brown, P.I. and Ramos, K., 2006. Streptozotocin (STZ) diabetes enhances benzo (α) pyrene induced renal injury in Sprague Dawley rats. *Toxicology letters*, *164*(3), pp.214-220.

Ward, Z.J., Yeh, J.M., Reddy, C.L., Gomber, A., Ross, C., Rittiphairoj, T., Manne-Goehler, J., Abdalla, A.T., Abdullah, M.A., Ahmed, A. and Ankotche, A., 2022. Estimating the total incidence of type 1 diabetes in children and adolescents aged 0–19 years from 1990 to 2050: a global simulation-based analysis. *The lancet Diabetes & endocrinology*, *10*(12), pp.848-858.

Wisudanti, D.D., 2016. Literature Review: Therapeutic Application of Geraniin From Rambutan (Nephelium Lappaceum) Peel Extract as Antihyperglycemic Through Its

UNIVERSITAS GADJAH MADA
PENGARUH FRAKSI AKTIF CIPLUKAN (Physalis angulata) TERHADAP STRUKTUR SEL-SEL SPERMATOGENIK DAN INFLAMASI TESTIS TIKUS WISTAR (Rattus norvegicus) DIABETES MELITUS YANG DIINDUKSI STREPTOZOTOCIN
Kim Danasjz Syafeti, Prof. Dr. dr. Dicky Moch. Rizal, M.Kes., Sp.And(K)., AIFM , dr. Nur Arfian, Ph.D
Universitas Gadjah Mada, 2024 | Diunduh dari http://etd.repository.ugm.ac.id/

Antioxcidant Activity in Type 2 Diabetes Mellitus. *NurseLine Journal*, *1*(1), pp.120-138.

Weinbauer, G.F., Luetjens, C.M., Simoni, M., Nieschag, E., 2010. Physiology of Testicular Function, in: Nieschlag, E., Behre, H.M., Nieschlag, S. (Eds.), Andrology: Male Reproductive Health and Dysfunction. Springer-verlag, Berlin, pp. 1–629

Xiong, Y. and Hales, D.B., 1997. Differential effects of tumor necrosis factor-α and interleukin-1 on 3β-hydroxysteroid dehydrogenase/Δ 5→ Δ 4 isomeraseexpression in mouse Leydig cells. *Endocrine*, *7*, pp.295-301.

Yoshikawa, T. and Naito, Y., 2002. What is oxidative stress?. *Japan medical association journal*, *45*(7), pp.271-276.

Yu, J., Wang, L., Walzem, R.L., Miller, E.G., Pike, L.M. and Patil, B.S., 2005. Antioxidant activity of citrus limonoids, flavonoids, and coumarins. *Journal of agricultural and food chemistry*, *53*(6), pp.2009-2014.

Zheng, H., Hu, Y., Shao, M., Chen, S. and Qi, S., 2023. Chromium Picolinate Protects against Testicular Damage in STZ-Induced Diabetic Rats via Anti-Inflammation, Anti-Oxidation, Inhibiting Apoptosis, and Regulating the TGF-β1/Smad Pathway. *Molecules*, *28*(22), p.7669.

Zakrzewski, P., Lenartowski, R., Rędowicz, M.J., Miller, K.G. and Lenartowska, M., 2017. Expression and localization of myosin VI in developing mouse spermatids. *Histochemistry and Cell Biology*, *148*, pp.445-462.

Ziamajidi, N., Nasiri, A., Abbasalipourkabir, R. and Sadeghi Moheb, S., 2017. Effects of garlic extract on TNF-α expression and oxidative stress status in the kidneys of rats with STZ+ nicotinamide-induced diabetes. *Pharmaceutical biology*, *55*(1), pp.526-531.

Zhou, D., Zhang, J., Wang, H. and Xue, Y., 2011. Effect of formaldehyde exposure on structure and function of epididymis in adult rats: a histological and biochemical study. *Toxicological & Environmental Chemistry*, *93*(1), pp.134-144.