

DAFTAR PUSTAKA

- American Diabetes Association (ADA), 2019. *Standards of Medical Care in Diabetes Vol 42*. USA, ISSN 0149-5992.
- Aguirre, G. A., Ita, J. R., Garza, R. G., & Castilla-Cortazar, I. 2016. Insulin-like growth factor-1 deficiency and metabolic syndrome. *Journal of translational medicine*, 14(1), 1–24. doi: 10.1186/s12967-015-0762-z
- Aleidi, S. M., Shayeb, E., Bzour, J., Abu-Rish, E. Y., Hudaib, M., Al Alawi, S., & Bustanji, Y. (2019). Serum level of insulin-like growth factor-I in type 2 diabetic patients: impact of obesity. *Hormone Molecular Biology and Clinical Investigation*, 39(1), 1–8. doi: 10.1515/hmbci-2019-0015
- Amiel, S. A., Sherwin, R. S., Hintz, R. L., Gertner, J. M., Press, C. M., & Tamborlane, W. V. 1984. Effect of diabetes and its control on insulin-like growth factors in the young subject with type I diabetes. *Diabetes*, 33(12), 1175–1179. doi: 10.2337/diab.33.12.1175
- Angela, T., Ginting, C. N., Chiuman, L., & Ginting, S. F. 2021. IGF-1 levels in patients with type 2 diabetes mellitus. *Majalah Kedokteran Bandung*. 53(2), 78–82. doi: 10.15395/mkb.v53n2.2278
- Azhari H. 2002. *Buku Panduan Ilmu Penyakit Dalam, Edisi Ke II*. Persatuan Ilmu Penyakit Dalam Indonesia.
- Bailes, J., & Soloviev, M. 2021. Insulin-like growth factor-1 (IGF-1) and its monitoring in medical diagnostic and in sports. *Biomolecules*, 11(2), 1–15. doi: 10.3390/biom11020217
- Bajaj, M. 2012. Nicotine and insulin resistance: When the smoke clears. *Diabetes*, 61(12), 3078–3080. doi:10.2337/db12-1100
- Baudry, A., Lamothe, B., Bucchini, D., Jami, J., Montarras, D., Pinset C., dan Jhosi, R.L. 2001. IGF-1 receptor as an alternative receptor for metabolic signaling in insulin receptor-deficient muscle cells. *FEBS Lett*. doi: 10.1016/s0014-5793(00)02435-2.
- Biadgo, B., Tamir, W., & Ambachew, S. 2020. Insulin-like growth factor and its therapeutic potential for diabetes complications-mechanisms and metabolic links: A review. *Review of Diabetic Studies*, 16(1), 24–34. doi: 10.1900/RDS.2020.16.24
- Biagetti, B., & Sim, R. 2021. *GH / IGF-1* Abnormalities and muscle impairment: from basic research to clinical practice. *International Journal of Molecular Sciences*. doi: 10.3390/ijms22010415.

- Boucher, J., Tseng, Y., & Kahn, C. R. 2010. Insulin and insulin-like growth factor-1 receptors act as ligand-specific amplitude modulators of a common pathway regulating gene transcription. *The Journal Of Biological Chemistry*. 285(22), 17235–17245. doi: 10.1074/jbc.M110.118620.
- Boucher J, Kleinridders A, Kahn CR. 2014. Insulin receptor signaling in normal and insulin-resistant states. *Cold Spring Harb Perspect Biol*. doi: 10.1101/cshperspect.a009191.
- Botros, R. M., El-Sherbeeney, A.A.A., Barbary, N. S., Muhammed, A.M., dan Ali, H.M. 2020. Study of the effect of nutrition and glycemic control and on igf-1 and growth in pre-pubertal egyptian children with T1DM. *The Egyptian Journal of Hospital Medicine*. DOI: 10.21608/EJHM.2020.126407.
- Cai, W., Sakaguchi, M., Kleinridders, A., Pino, G. G., Dreyfuss, J. M., Neill, B. T. O. et al., 2017. Domain-dependent effects of insulin and IGF-1 receptors on signalling and gene expression. *Nature Communications*. doi: 10.1038/ncomms14892.
- Clemmons DR. 2012. Metabolic actions of insulin-like growth factor-I in normal physiology and diabetes. *Endocrinol Metab Clin North Am*. doi: 10.1016/j.ecl.2012.04.017.
- Cornell, S. 2015. Continual evolution of type 2 diabetes : an update on pathophysiology and emerging treatment options. *Therapeutics and Clinical Risk Management*. 621–632. doi: 10.2147/TCRM.S67387.
- Ezzat, V. A., Duncan, E. R., Wheatcroft, S. B., & Kearney, M. T. 2008. The role of IGF-1 and its binding proteins in the development of type 2 diabetes and cardiovascular disease. *Diabetes, Obesity and Metabolism*, 10(3), 198–211. doi: 10.1111/j.1463-1326.2007.00709.x.
- Fayyaz, B. 2019. Interpretation of hemoglobin A1C in primary care setting. *Journal of Community Hospital Internal Medicine Perspectives*, 9(1), 18–21. doi: 10.1080/20009666.2018.1559432.
- Friedrich, N., Thuesen, B., Jørgensen, T., Juul, A., Spielhagen, C., Wallaschofski, H., & Linneberg, A. 2012. The association between IGF-1 and insulin resistance: A general population study in Danish adults. *Diabetes Care*, 35(4), 768–773. doi: 10.2337/dc11-1833.
- Goyal R, Jialal I. 2022. Diabetes Mellitus Type 2. Treasure Island (FL): StatPearls Publishing. PMID: 30020625. <https://pubmed.ncbi.nlm.nih.gov/30020625/>.

- Haywood, N. J., Slater, T. A., Matthews, C. J., & Wheatcroft, S. B. 2019. The insulin like growth factor and binding protein family: Novel therapeutic targets in obesity & diabetes. *Molecular Metabolism*, 86–96. doi: 10.1016/j.molmet.2018.10.008.
- Higashi, Y., Sukhanov, S., Anwar, A., Shai, S. Y., & Delafontaine, P. 2010. IGF-1, oxidative stress and atheroprotection. *Trends in Endocrinology and Metabolism*, 21(4), 245–254. doi: 10.1016/j.tem.2009.12.005.
- Hu FB, Manson JE, Stampfer MJ, Colditz G, Liu S, Solomon CG, Willett WC. 2001. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N Engl J Med*. doi: 10.1056/NEJMoa010492.
- Imrie, H., Viswambharan, H., Sukumar, P., Abbas, A., Cubbon, R. M., Yuldasheva, N. et al., 2012. Novel role of the IGF-1 receptor in endothelial function and repair: Studies in endothelium-targeted IGF-1 receptor transgenic mice. *Diabetes*, 61(9), 2359–2368. doi: org/10.2337/db11-1494.
- International Diabetes Federation (IDF). 2021. *IDF Diabetes Atlas 10Th Edition*. ISBN: 978-2-930229-98-0. www.diabetesatlas.org.
- Ishikawa-Takata, K., Ohta, T., Moritaki, K., Gotou, T., & Inoue, S. 2002. Obesity, weight change and risks for hypertension, diabetes and hypercholesterolemia in Japanese men. *European Journal of Clinical Nutrition*, 56(7), 601–607. doi: 10.1038/sj.ejcn.1601364.
- Ismail, L., Matewala, H., & Al, J. 2021. Association of risk factors with type 2 diabetes: A systematic review. *Comput Struct Biotechnol J*. 19: 1759–1785. doi: 10.1016/j.csbj.2021.03.003.
- Janssen, J. A. M. J. L., & Lamberts, S. W. J. 2002. The role of IGF-1 in the development of cardiovascular disease in type 2 diabetes mellitus: Is prevention possible?. *European Journal of Endocrinology*, 146(4), 467–477. doi: 10.1530/eje.0.1460467.
- John, W. G. 2012. Use of HbA 1c in the diagnosis of diabetes mellitus in the UK. The implementation of World Health Organization guidance 2011. *Diabetic Medicine*, 29(11), 1350–1357. doi: 10.1111/j.1464-5491.2012.03762.x.
- Kementerian Kesehatan RI. 2020. *Infodatin tetap produktif, cegah, dan atasi Diabetes Melitus 2020*. In *Pusat Data dan Informasi Kementerian* <https://pusdatin.kemkes.go.id/resources/download/pusdatin/infodatin/infodatin-2020-Diabetes-Melitus.pdf>.
- Khairani. 2019. Hari Diabetes Sedunia Tahun 2018. *Pusat Data Dan*

- Khan, H. A., Ola, M. S., Alhomida, A. S., Sobki, S. H., & Khan, S. A. 2014. Evaluation of HbA1c criteria for diagnosis of diabetes mellitus: A retrospective study of 12785 type 2 Saudi male patients. *Endocrine Research*, 39(2), 62–66. doi: 10.3109/07435800.2013.828740.
- Kim SY, Kim M, Oh Y, Lee DY. 2021. Relationship of serum total insulin-like growth factor binding protein-3 with insulin-like growth factor-i and glucose tolerance in korean children and adolescents. *Int J Endocrinol*. doi: 10.1155/2021/9966114.
- Kim, M. S., & Lee, D.-Y. 2015. Insulin-like growth factor (IGF)-I and IGF binding proteins axis in diabetes mellitus. *Annals of Pediatric Endocrinology & Metabolism*, 20(2), 69. doi: 10.6065/apem.2015.20.2.69.
- Lal, B. S. 2016. *Diabetes : causes , symptoms and treatments diabetes : causes , symptoms and treatments*. January. <https://www.researchgate.net/publication/311562631>.
- Laron, Z. 2001. Insulin-like growth factor 1 (IGF-1): a growth hormone. *J Clin Pathol: Mol Pathol*. 54 (311–316). doi: 10.1136/mp.54.5.311.
- Lewitt, M., Dent, M., & Hall, K. 2014. The insulin-like growth factor system in obesity, insulin resistance and type 2 diabetes mellitus. *Journal of Clinical Medicine*, 3(4), 1561–1574. doi: 10.3390/jcm3041561.
- Lim, D. J., Kwon, H. S., Cho, J. H., Kim, S. H., Choi, Y. H., Yoon, K. H. et al., 2007. Acromegaly associated with type 2 diabetes showing normal IGF-1 levels under poorly controlled glycemia. *Endocrine Journal*, 54(4), 537–541. doi: 10.1507/endocrj.K06-083.
- Liu, F., Wang, Y., Zhao, Q., Zhang, M., & Ban, B. 2021. Association between uric acid and insulin-like growth factor-1 in type 2 diabetes mellitus. *International Journal of General Medicine*, 14 (4017–4023). doi: 10.2147/IJGM.S323579
- Lukanova, A., Söderberg, S., Stattin, P., Palmqvist, R., Lundin, E., Biessy, C., ... Kaaks, R. 2002. Nonlinear relationship of insulin-like growth factor (IGF)-I and IGF-1/IGF-binding protein-3 ratio with indices of adiposity and plasma insulin concentrations (Sweden). *Cancer Causes and Control*. doi:10.1023/a:1016392129279.
- Odegaard, A. O., Jacobs, D. R., Sanchez, O. A., Goff, D. C., Reiner, A. P., & Gross, M. D. 2016. Oxidative stress, inflammation, endothelial dysfunction and incidence of type 2 diabetes. *Cardiovascular*

Diabetology, 15(1), 1–12. doi: 10.1186/s12933-016-0369-6.

Oh, J., Kim, J. Y., Park, S., Youn, J. C., Son, N. H., Shin, D. J., Lee, S. H., Kang, S. M., Jee, S. H., & Jang, Y. 2012. The relationship between insulin-like growth factor-1 and metabolic syndrome, independent of adiponectin. *Clinica Chimica Acta*, 413(3–4), 506–510. doi: 10.1016/j.cca.2011.11.015.

Pardina, E., Ferrer, R., Baena-Fustegueras, J. A., Lecube, A., Fort, J. M., Vargas, V., Catalán, R., & Peinado-Onsurbe, J. 2010. The relationships between IGF-1 and CRP, NO, leptin, and adiponectin during weight loss in the morbidly obese. *Obesity Surgery*, 20(5), 623–632. doi: 10.1007/s11695-010-0103-5.

PERKENI. 2015. *Pengelolaan dan pencegahan DMT2 di Indonesia*. PERKENI: Jakarta.

Phillips LS, Pao CI, Villafuerte BC. 1998. Molecular regulation of insulin-like growth factor-I and its principal binding protein, IGFBP-3. *Prog Nucleic Acid Res Mol Biol.* doi: 10.1016/s0079-6603(08)60894-6.

Punjabi, N. M., Shahar, E., Redline, S., Gottlieb, D. J., Givelber, R., & Resnick, H. E. 2004. Sleep-disordered breathing, glucose intolerance, and insulin resistance: The sleep heart health study. *American Journal of Epidemiology*, 160(6), 521–530. doi: 10.1093/aje/kwh261.

Rajpathak SN, Gunter MJ, Wylie-Rosett J, Ho GY, Kaplan RC, Muzumdar R, Rohan TE, S. H. 2014. Physical exercise as therapy for type II diabetes. *Diabetes/Metabolism Research and Reviews*, 32(30), 13–23. doi: 10.1002/dmrr.919.

Ramachandran, A. 2014. Know the sign and symptoms of diabetes. *Indian J Med Res*, November, 579–581.

Rawal, G., Yadav, S., & Singh, A. 2016. Glycosylated hemoglobin (HbA1C): A brief overview for clinicians. *Indian Journal of Immunology and Respiratory Medicine*, 1(2): 33–36.

Renes, J. S., Van Doorn, J., & Hokken-Koelega, A. C. S. 2019. Current insights into the role of the growth hormone-insulin-like growth factor system in short children born small for gestational age. *Hormone Research in Paediatrics*, 92(1), 15–27. doi: 10.1159/000502739.

Riskesdas. 2018. *Laporan Nasional Riset Kesehatan Dasar*. Jakarta: Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan (LPB). ISBN: 978-602-373-118-3.

Riskesdas. 2013. *Riset kesehatan dasar*. Jakarta: Badan Penelitian dan

Pengembangan Kesehatan Kementerian Kesehatan RI.

- Rodríguez-Moran, M., Guerrero-Romero, F., Aradillas-García, C., Violante, R., Simental-Mendia, L. E., Monreal-Escalante, E., & de la Cruz Mendoza, E. 2010. Obesity and family history of diabetes as risk factors of impaired fasting glucose: Implications for the early detection of prediabetes. *Pediatric Diabetes*, 11(5), 331–336. doi: 10.1111/j.1399-5448.2009.00590.x.
- Roelfsema, V. 2001. The growth hormone and insulin-like growth factor axis: its manipulation for the benefit of growth disorders in renal failure. *J Am Soc Nephrol*. 6, 1297–1306. doi: 10.1681/ASN.V1261297.
- Salim, Y., Kalanjati, V. P., Prajitno, J. H., & Melbiarta, R. R. 2022. Hemoglobin A1c (Hba1c) is strongly correlated with mean corpuscular volume among type 2 diabetes mellitus (T2DM) patients admitted in a tertiary hospital in East Java, Indonesia. *Folia Medica Indonesiana*, 58(1), 46. doi: 10.20473/fmi.v58i1.32628.
- Samanta, S. 2020. Glycated hemoglobin and subsequent risk of microvascular and macrovascular complications. *Indian Journal of Medical Sciences*, 73(2), 230–238. doi: 10.25259/ijms_16_2020.
- Scarth JP. 2006. Modulation of the growth hormone-insulin-like growth factor (GH-IGF) axis by pharmaceutical, nutraceutical and environmental xenobiotics: an emerging role for xenobiotic-metabolizing enzymes and the transcription factors regulating their expression. A review. *Xenobiotica*. 36(2-3):119-218. doi: 10.1080/00498250600621627.
- Schneider, H. J., Friedrich, N., Klotsche, J., Schipf, S., Nauck, M., Völzke, H. et al., 2011. Prediction of incident diabetes mellitus by baseline IGF1 levels. *European Journal of Endocrinology*, 164(2), 223–229. doi: 10.1530/EJE-10-0963
- Sherwani, S. I., Khan, H. A., Ekhzaimy, A., Masood, A., & Sakharkar, M. K. 2016. Significance of HbA1c test in diagnosis and prognosis of diabetic patients. *Biomarker Insights*. doi: 10.4137/BMI.S38440.TYPE.
- Sinha, B., & Ghosal, S. 2021. A target HbA1c between 7 and 7.7% reduces microvascular and macrovascular events in T2D regardless of duration of diabetes: a meta-analysis of randomized controlled trials. *Diabetes Therapy*, 12(6), 1661–1676. doi: 10.1007/s13300-021-01062-6.
- Soliman, A., Sanctis, V., Elalaily, R., & Yassin, M. 2015. Insulin-like growth factor- i and factors affecting it in thalassemia major. *Indian Journal of Endocrinology and Metabolism*, 19(2), 245–251. doi: 10.4103/2230-

8210.131750.

- Stanley, T. L., Feldpausch, M. N., Murphy, C. A., Grinspoon, S. K., & Makimura, H. 2014. Discordance of IGF-1 and GH stimulation testing for altered GH secretion in obesity. *Growth Hormone and IGF Research*, 24(1), 10–15. doi: 10.1016/j.ghir.2013.11.001.
- Suda, K., Matsumoto, R., Fukuoka, H., Iguchi, G., Hirota, Y., Nishizawa, H. et al., 2016. The influence of type 2 diabetes on serum GH and IGF-1 levels in hospitalized Japanese patients. *Growth Hormone and IGF Research*, 29, 4–10. doi: 10.1016/j.ghir.2016.03.002.
- Sutriyawan, A., Miranda, T. G., & Akbar, H. 2020. *Risk Factors of Type 2 Diabetes Mellitus in Hospital of Bengkulu City. Indonesia : Case Control Study. December.* doi: org/10.37506/ijfmt.v14i4.11571.
- Thraillkill, K. M. 2000. Insulin-like growth factor-I in diabetes mellitus: its physiology, metabolic effects, and potential clinical utility. *Diabetes Technol Ther.* 2(1):69-80. doi: 10.1089/152091599316775.
- Yakar, S., & Adamo, M. L. 2012. Insulin-like growth factor 1 physiology. lessons from mouse models. *Endocrinology and Metabolism Clinics of North America*, 41(2), 231–247. doi: 10.1016/j.ecl.2012.04.008.
- WHO. 2016. Diabetes Fact Sheet. World Health Organization.
- Zheng, T., Gao, Y., & Tian, H. 2012. Relationship between blood lipid profiles and pancreatic islet β cell function in Chinese men and women with normal glucose tolerance: A cross-sectional study. *BMC Public Health*, 12(1), 1. doi: 10.1186/1471-2458-12-634.
- Zhu, H., Xu, Y., Gong, F., Shan, G., Yang, H., Xu, K. et al., 2017. Reference ranges for serum insulin-like growth factor I (IGF-1) in healthy Chinese adults. *PLoS ONE*. 12(10), 1–15. doi: 10.1371/journal.pone.0185561

LAMPIRAN

Lampiran 1. Persuratan

Persetujuan Etik



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN
KOMITE ETIK PENELITIAN UNIVERSITAS HASANUDDIN
RSPTN UNIVERSITAS HASANUDDIN
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
Sekretariat : Lantai 2 Gedung Laboratorium Terpadu
JL. PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.



Contact Person: dr. Agussalim Bukhari, MMed, PhD, SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

REKOMENDASI PERSETUJUAN ETIK Nomor : 136/UN4.6.4.5.31/ PP36/ 2023

Tanggal: 22 Februari 2023

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH23010052		No Sponsor	
Peneliti Utama	Alya Rahmaditya Arfan, S.Si		Sponsor	
Judul Peneliti	Analisis Hubungan Hemoglobin Terглиkasi dengan Kadar Insulin Like Growth Factor 1 Serum pada Pasien Penderita Diabetes Melitus Tipe 2			
No Versi Protokol	2	Tanggal Versi	20 Februari 2023	
No Versi PSP	2	Tanggal Versi	20 Februari 2023	
Tempat Penelitian	Rumah Sakit Pendidikan Universitas Hasanuddin Makassar			
Jenis Review	<input type="checkbox"/> Exempted	<input checked="" type="checkbox"/> Expedited	<input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 22 Februari 2023 sampai 22 Februari 2024 Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	Nama	Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)		Tanda tangan
Sekretaris KEP Universitas Hasanuddin	Nama	dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)		Tanda tangan

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Laporan SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Surat Permohonan Izin Penggunaan Laboratorium



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN,
RISET DAN TEKNOLOGI
UNIVERSITAS HASANUDDIN
SEKOLAH PASCASARJANA

Jalan Perintis Kemerdekaan km. 10 Makassar 90245 Telp. : (0411) 585034, 585036
Fax. : (0411) 585868, E-mail : info@pasca.unhas.ac.id <http://pasca.unhas.ac.id>

Nomor : 11130 /UN4.20.1/PT.01.04/2023 28 Februari 2023
Perihal : Permohonan Izin Penggunaan Laboratorium

Yth. Kepala Laboratorium HUMRC RS. Unhas.
Makassar

Dengan hormat disampaikan bahwa mahasiswa Sekolah Pascasarjana Universitas Hasanuddin yang tersebut dibawah ini :

Nama : Alya Rahmaditya Arfan
Nomor Pokok : P062212003
Program Pendidikan : Magister (S2)
Program Studi : Ilmu Biomedik

Bermaksud melakukan penelitian dalam rangka persiapan penulisan tesis terkait dengan judul "Analisis Hubungan Hemoglobin Terглиkasi dengan kadar insulin Like Growth Factor 1 Serum pada penderita Diabetes Melitus Tipe 2".

Sehubungan dengan hal tersebut, mohon kiranya yang bersangkutan diberikan izin untuk melakukan penelitian di instansi yang Bapak/Ibu pimpin Unhas.

Atas perkenan dan kerjasamanya diucapkan terima kasih.

a.n. Dekan
Wakil Dekan Bidang Akademik dan
Kemahasiswaan




Prof. Baharuddin Hamzah., ST., M.Arch., Ph.D.
NIP. 196903081995121001

Tembusan Yth:

1. Dekan SPs Unhas "sebagai laporan"
2. Mahasiswa yang bersangkutan;
3. Arsip.

Surat Pengantar Penelitian

 HUM-RC <small>HASANUDDIN UNIVERSITY PHARMACY RESEARCH CENTER science for a better future</small>	ADMINISTRASI	FORMULIR 1
	Nomor : 048/02/FR1/2023	Tanggal : 10 Februari 2023
SURAT PENGANTAR PENELITIAN		

Kepada Yth.
Pembimbing/pendamping,
Ibu Handayani Halik,

Dengan ini menerangkan bahwa peneliti/mahasiswa berikut ini :

Nama : Alya Rahmaditya Arfan
NIM : P062212003
Institusi : Pascasarjana Ilmu Biomedik Universitas Hasanuddin

Akan melakukan pengambilan data/ analisa bahan hayati :

Pada tanggal : 13 Februari 2023 s/d Selesai
Jumlah subjek : ± 62 sampel
Jenis data : Data Primer

Untuk penelitian dengan judul :

“Analisis Hubungan Hemoglobin Terглиkisasi dengan Kadar Insulin Like Growth Factor 1 Serum pada Pasien Penderita Diabetes Melitus Tipe 2”

Harap dilakukan pembimbingan dan pendampingan seperlunya. Terima Kasih.

Staf Administrasi,


HUM-RC
science for a better future
Andi Fidyah Septiani

Catatan :

Jika pengambilan data telah selesai, **di wajibkan bagi pendamping/pembimbing;**

1. Membubuhi **paraf dan tanggal selesai** pengambilan data di formulir ini,
2. Mengisi **jumlah alat dan bahan habis pakai** yang digunakan peneliti pada form tarif penggunaan alat dan bahan,
3. **Mengembalikan formulir** yang sudah lengkap ke staf administrasi.

Lampiran 2. Data Primer

KODE SPESIMEN	JENIS KELAMIN	UMUR	HbA1C (%)	IGF-1 (pg/mL)
14	P	55	10,3	2330,480806
19	L	60	7,6	1136,03795
21	P	56	10	3064,437812
22	P	61	8,3	1966,766813
23	L	53	9,4	2059,74041
24	P	64	9	6325,6301
25	L	68	6,6	12468,35648
26	L	69	8,0	8281,298057
27	P	56	8,1	162,7860463
28	P	55	10,0	1216,8293
32	P	62	11,6	4437,486205
33	P	50	11,1	4879,695702
34	P	53	11.1	229,1555933
35	L	57	10,4	821,6889351
39	P	63	8,2	1953,46819
40	P	49	7,9	5078,524037
41	P	47	7,6	4093,346508
42	P	63	10,0	3338,100734
43	P	58	10,1	7784,711476
44	P	59	7,4	1870,095597
45	L	65	7,7	4936,166618
46	P	43	11,5	9406,71161
47	L	60	8,3	5889,339752
48	L	63	15,9	4105,046987
49	L	62	9,9	1076,224743
50	P	56	6,3	8685,273175
52	P	52	5,8	2642,642033
54	L	44	6,6	3432,728911
56	P	61	14,4	6092,99467
58	L	70	7,7	8640,648208
61	P	63	10,8	4247,772174
62	L	54	9,0	1951,780813
66	P	39	7,0	9726,071808
69	P	45	14,6	8863,981742
71	L	63	6,2	2916,525957
72	P	45	8,1	4412,235593
73	L	79	7,7	3869,92872
76	L	61	7,6	1105,97815

77	L	61	10,6	9654,479655
78	P	73	7,2	10105,56535
79	L	42	6,5	13514,94716
84	L	61	10,1	3504,967272
81	P	52	7	2381,680609
82	L	67	9,7	2082,804202
83	P	63	6,2	1360,35076
86	L	47	9,7	754,6757587
87	P	64	11,5	6064,415521
88	P	46	9,6	7297,997386
89	L	84	9,2	10431,78616
90	P	65	13,8	6899,566512
91	P	67	6,9	2533,013219
92	L	61	6,7	4767,110238
93	P	72	6,0	4677,589638
94	L	57	7,1	733,7499037
95	P	63	9,4	814,3343978
96	L	53	7,2	11632,37842
97	P	58	7,2	9340,431102
98	L	52	5,9	5181,357165
99	L	39	8,5	8790,286609
102	P	28	11,4	11637,16633

Lampiran 3. Analisis Data

1. Karakteristik Sampel

Frequency Table

		Jenis Kelamin		Valid Percent	Cumulative Percent
		Frequency	Percent		
Valid	Laki-laki	26	43.3	43.3	43.3
	Perempuan	34	56.7	56.7	100.0
	Total	60	100.0	100.0	

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
hbA1c	60	10.10	5.80	15.90	8.9200	2.26183
IGF-1	60	13352.16111370 00	162.7860463000	13514.94716000 00	4994.355696398 336	3525.240689403 2080
Valid N (listwise)	60					

2. Uji Normalitas

Case Processing Summary

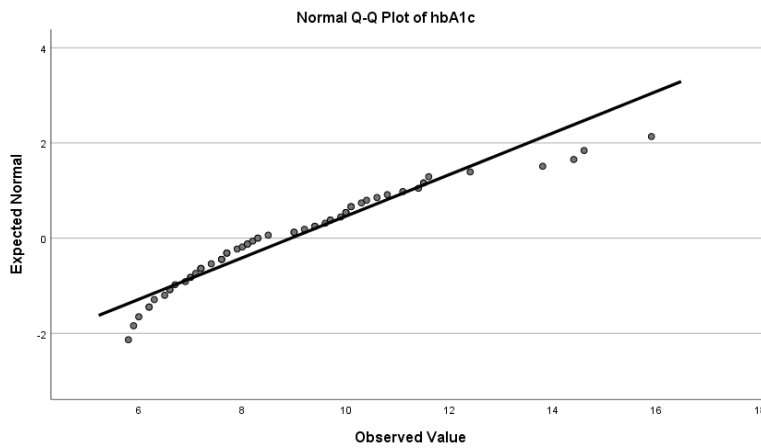
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
hbA1c	60	100.0%	0	0.0%	60	100.0%
IGF-1	60	100.0%	0	0.0%	60	100.0%

Tests of Normality

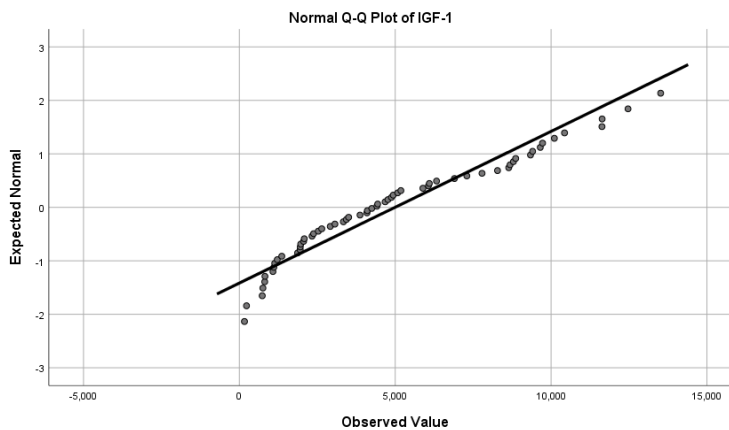
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
hbA1c	.127	60	.017	.925	60	.001
IGF-1	.112	60	.058	.933	60	.003

a. Lilliefors Significance Correction

HbA1c



IGF-1



IGF-1 pada kelompok DMT2 terkontrol dan tidak terkontrol

Case Processing Summary

	Kelompok	Valid		Cases Missing		Total	
		N	Percent	N	Percent	N	Percent
IGF-1	Terkontrol	11	100.0%	0	0.0%	11	100.0%
	Tidak Terkontrol	49	100.0%	0	0.0%	49	100.0%

Descriptives

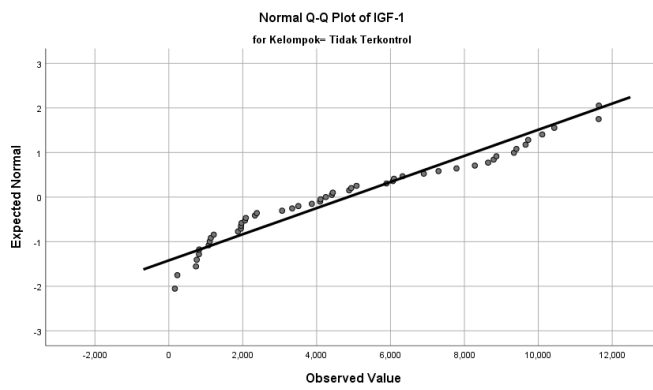
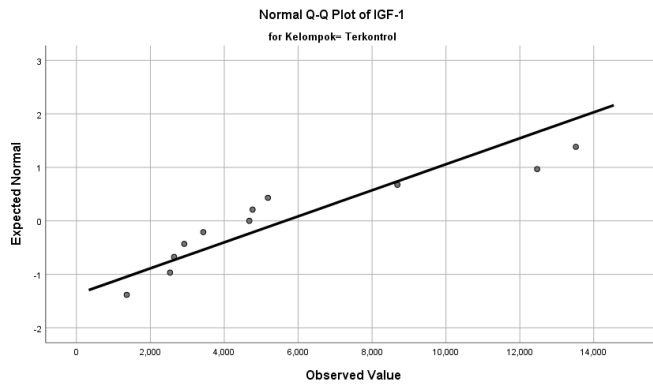
	Kelompok		Statistic	Std. Error
IGF-1	Terkontrol	Mean	5652.717703272728	1239.6992077746438
		95% Confidence Interval for Mean		
		Lower Bound	2890.495733653439	
		Upper Bound	8414.939672892016	
		5% Trimmed Mean	5454.392008080807	
		Median	4677.589638000000	
		Variance	16905395.383	
		Std. Deviation	4111.6171250893330	
		Minimum	1360.3507600000	
		Maximum	13514.9471600000	
	Range	12154.5964000000		
	Interquartile Range	6042.6311420000		
	Skewness	1.162	.661	
	Kurtosis	.107	1.279	
	Tidak Terkontrol	Mean	4846.560143834694	487.2175008910025
		95% Confidence Interval for Mean		
		Lower Bound	3866.943702020589	
		Upper Bound	5826.176585648800	
		5% Trimmed Mean	4734.591143529137	
		Median	4247.772174000000	
Variance		11631663.766		
Std. Deviation		3410.5225062370178		
Minimum		162.7860463000		
Maximum		11637.1663300000		
Range	11474.3802837000			
Interquartile Range	6080.3802650000			
Skewness	.425	.340		
Kurtosis	-1.067	.668		

Tests of Normality

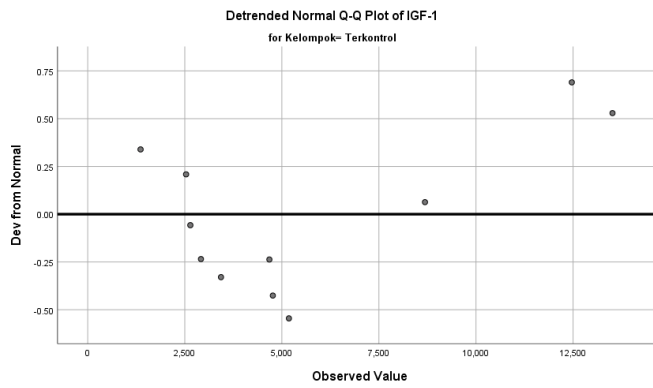
	Kelompok	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
IGF-1	Terkontrol	.273	11	.022	.835	11	.027
	Tidak Terkontrol	.132	49	.031	.928	49	.005

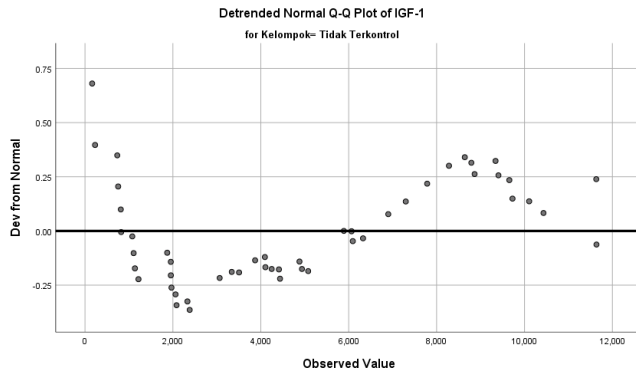
a. Lilliefors Significance Correction

Normal Q-Q Plots



Detrended Normal Q-Q Plots





IGF-1 kelompok terkontrol berdasarkan umur

Umur

Case Processing Summary

		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
IGF-1	<=50 tahun	2	100.0%	0	0.0%	2	100.0%
	>50 tahun	9	100.0%	0	0.0%	9	100.0%

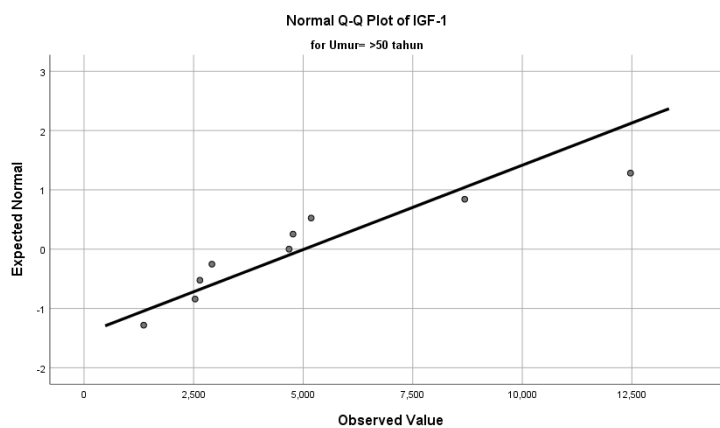
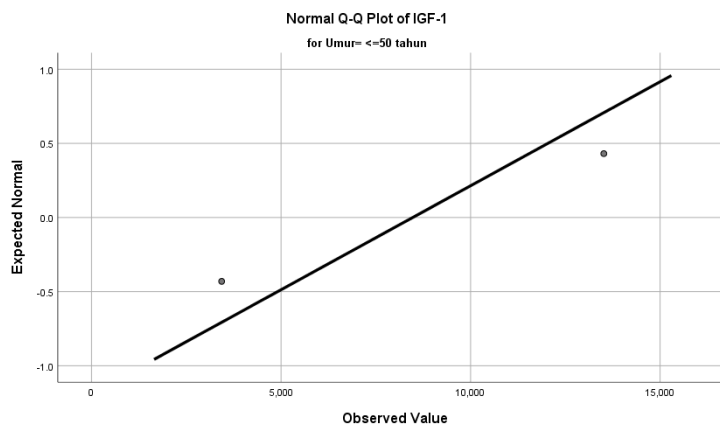
Descriptives

Umur		Statistic		Std. Error
IGF-1	<=50 tahun	Mean	8473.838035500000	5041.1091244999990
		95% Confidence Interval for		
		Lower Bound	-55579.526597795500	
		Upper Bound	72527.202668795500	
		Mean		
		5% Trimmed Mean	.	
		Median	8473.838035500000	
		Variance	50825562.410	
		Std. Deviation	7129.2048932706580	
		Minimum	3432.7289110000	
		Maximum	13514.9471600000	
		Range	10082.2182490000	
		Interquartile Range	.	
Skewness	.			
Kurtosis	.			
>50 tahun		Mean	5025.802073888889	1171.2632230247330
		95% Confidence Interval for		
		Lower Bound	2324.864238187180	
		Upper Bound	7726.739909590598	
		Mean		
		5% Trimmed Mean	4815.963013209878	
		Median	4677.589638000000	
		Variance	12346717.838	
		Std. Deviation	3513.7896690741990	
		Minimum	1360.3507600000	
		Maximum	12468.3564800000	
		Range	11108.0057200000	
		Interquartile Range	4345.4875440000	
Skewness	1.384	.717		
Kurtosis	1.611	1.400		

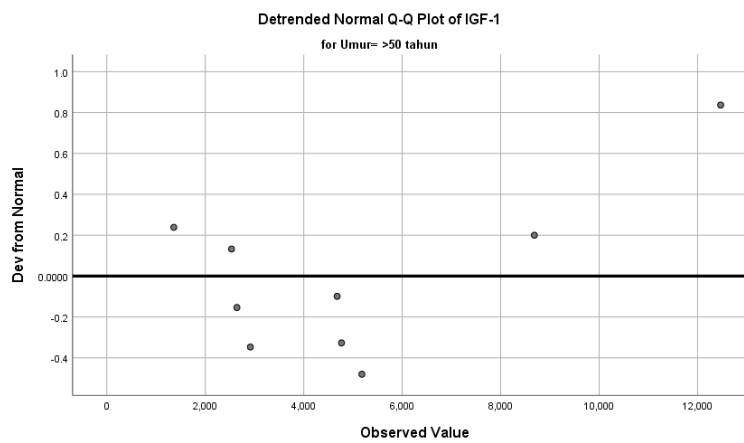
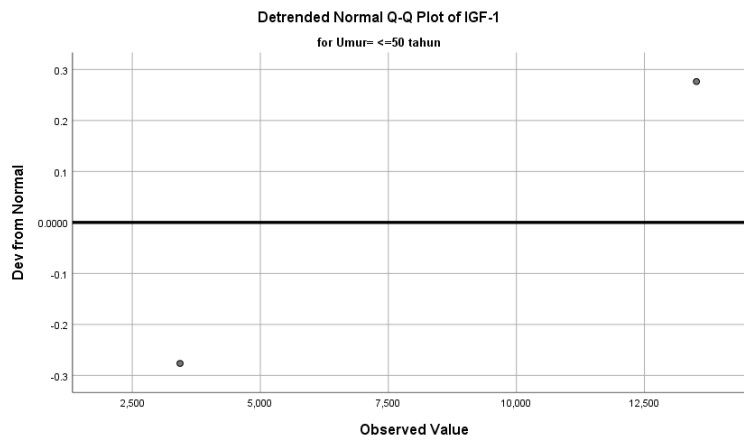
Tests of Normality							
	Umur	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
IGF-1	<=50 tahun	.260	2	.			
	>50 tahun	.260	9	.080	.859	9	.094

a. Lilliefors Significance Correction

IGF-1 Normal Q-Q Plots



Detrended Normal Q-Q Plots



IGF-1 kelompok tidak terkontrol berdasarkan umur

Case Processing Summary

	Umur	Valid		Cases Missing		Total	
		N	Percent	N	Percent	N	Percent
IGF-1	<=50 tahun	11	100.0%	0	0.0%	11	100.0%
	>50 tahun	38	100.0%	0	0.0%	38	100.0%

Descriptives

				Statistic	Std. Error
IGF-1	<=50 tahun	Mean		6812.790280336363	969.7556783061260
		95% Confidence Interval for Mean	Lower Bound	4652.039976568180	
			Upper Bound	8973.540584104547	
		5% Trimmed Mean		6881.331306557070	
		Median		7297.997386000000	
		Variance		10344686.832	
		Std. Deviation		3216.3157232580133	
		Minimum		754.6757587000	
		Maximum		11637.1663300000	
		Range		10882.4905713000	
		Interquartile Range		4994.4760170000	
		Skewness		-.359	.661
		Kurtosis		-.483	1.279
		>50 tahun	Mean		4277.388262215789
	95% Confidence Interval for Mean		Lower Bound	3196.607621254560	
			Upper Bound	5358.168903177018	
	5% Trimmed Mean			4127.214676021345	
	Median			3421.534003000000	
	Variance			10811782.973	
	Std. Deviation			3288.1275786210235	
	Minimum			162.7860463000	
	Maximum			11632.3784200000	
	Range			11469.5923737000	
	Interquartile Range		4762.3351802500		
Skewness		.698	.383		
Kurtosis		-.687	.750		

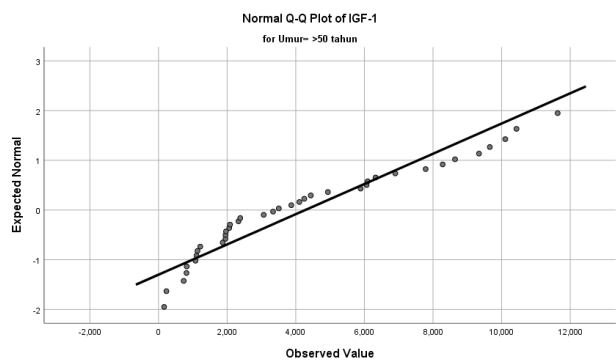
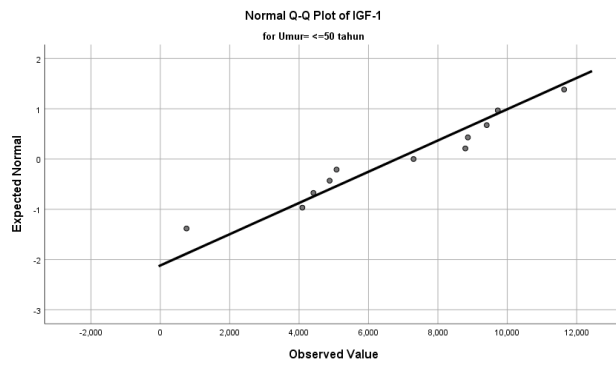
Tests of Normality

	Umur	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
IGF-1	<=50 tahun	.185	11	.200*	.951	11	.661
	>50 tahun	.165	38	.010	.909	38	.005

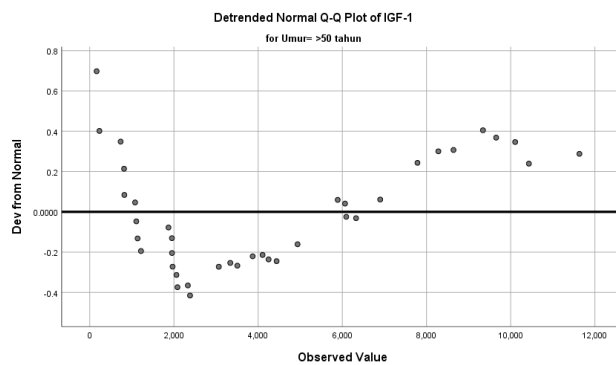
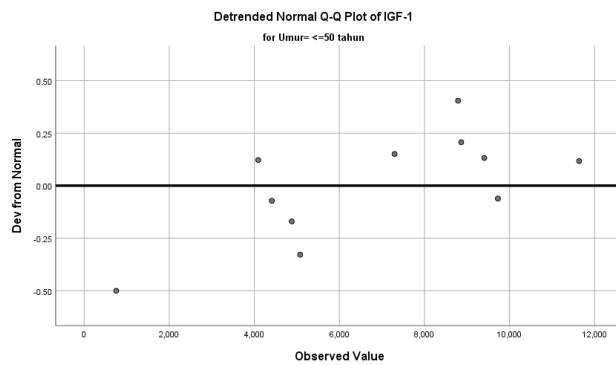
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Normal Q-Q Plots



Detrended Normal Q-Q Plots



3. Uji Perbandingan IGF-1 Terkontrol dan Tidak Terkontrol pada Subjek DMT2

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
IGF-1	60	4994.355696398333	3525.2406894032080	162.7860463000	13514.9471600000
Kelompok	60	1.8167	.39020	1.00	2.00

Mann-Whitney Test

		Ranks		
	Kelompok	N	Mean Rank	Sum of Ranks
IGF-1	Terkontrol	11	33.73	371.00
	Tidak Terkontrol	49	29.78	1459.00
	Total	60		

Test Statistics^a

	IGF-1
Mann-Whitney U	234.000
Wilcoxon W	1459.000
Z	-.678
Asymp. Sig. (2-tailed)	.498

a. Grouping Variable:
Kelompok

3. Uji Perbandingan IGF-1 Kelompok Terkontrol dan Tidak Terkontrol Berdasarkan Kelompok Umur (<50 tahun)

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
IGF-1	13	7068.336088823078	3639.3868809848220	754.6757587000	13514.9471600000
Kelompok	13	1.8462	.37553	1.00	2.00

Mann-Whitney Test

		Ranks		
	Kelompok	N	Mean Rank	Sum of Ranks
IGF-1	Terkontrol	2	7.50	15.00
	Tidak Terkontrol	11	6.91	76.00
	Total	13		

Test Statistics^a

IGF-1	
Mann-Whitney U	10.000
Wilcoxon W	76.000
Z	-.197
Asymp. Sig. (2-tailed)	.844
Exact Sig. [2*(1-tailed Sig.)]	.923 ^b

a. Grouping Variable: Kelompok

b. Not corrected for ties.

4. Uji Perbandingan IGF-1 Kelompok Terkontrol dan Tidak Terkontrol Berdasarkan Kelompok Umur (≥50 tahun)

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
IGF-1	47	4420.701545302128	3306.4019030840086	162.7860463000	12468.3564800000
Kelompok	47	1.8085	.39773	1.00	2.00

Mann-Whitney Test

Ranks

	Kelompok	N	Mean Rank	Sum of Ranks
IGF-1	Terkontrol	9	27.67	249.00
	Tidak Terkontrol	38	23.13	879.00
	Total	47		

Test Statistics^a

IGF-1	
Mann-Whitney U	138.000
Wilcoxon W	879.000
Z	-.892
Asymp. Sig. (2-tailed)	.372
Exact Sig. [2*(1-tailed Sig.)]	.386 ^b

a. Grouping Variable: Kelompok

b. Not corrected for ties.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
IGF-1	Equal variances assumed	.978	.327	.740	58	.462	907.049776 0819998	1225.88954 25063693	-	3360.93430 69473530
	Equal variances not assumed			.627	11.301	.543	907.049776 0819998	1447.29144 96574810	-	4082.20658 01415374

Statistics

Terkontrol

N	Valid	10
	Missing	0
Mean	5750.2305	
Median	4099.9196	
Mode	1360.35 ^a	
Std. Deviation	4320.5965	
	6	
Range	12154.60	
Minimum	1360.35	
Maximum	13514.95	

a. Multiple modes exist.

The smallest value is shown

Statistics

Tidak Terkontrol

N	Valid	50
	Missing	0
Mean	4843.18073	
	3718	
Median	4330.00388	
	3500	
Mode	162.786046	
	3 ^a	
Std. Deviation	3375.62644	
	45302	

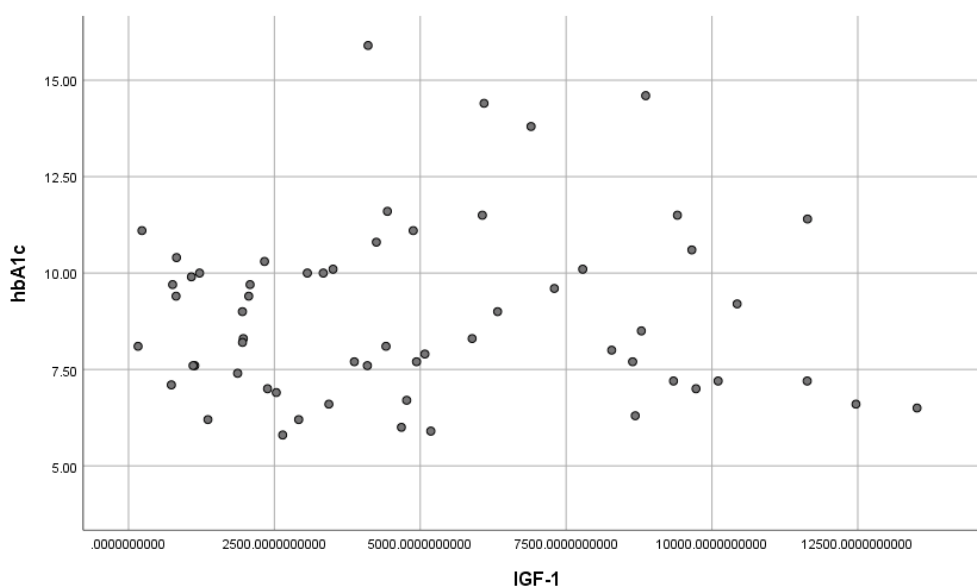
Range	11474.3802 837
Minimum	162.786046 3
Maximum	11637.1663 300

a. Multiple modes exist. The smallest value is shown

5. Uji Korelasi hbA1C dan IGF-1 pada Subjek DMT2

		Correlations		
			hbA1c	IGF-1
<i>Spearman's rho</i>	hbA1c	Correlation Coefficient	1.000	-.005
		Sig. (2-tailed)	.	.972
		N	60	60
	IGF-1	Correlation Coefficient	-.005	1.000
		Sig. (2-tailed)	.972	.
		N	60	60

6. Scatterplot HbA1c dan IGF-1



7. Uji Korelasi Variabel Umur dan IGF-1 pada Penderita DM Tipe 2

Correlations

		Umur	IGF-1
Umur	Pearson Correlation	1	-.129
	Sig. (2-tailed)		.325
	N	60	60
IGF-1	Pearson Correlation	-.129	1
	Sig. (2-tailed)	.325	
	N	60	60

8. Uji Pengaruh Variabel Hba1c dan Umur terhadap IGF-1 pada Penderita DM Tipe 2

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Hba1c, Umur ^b	.	Enter

a. Dependent Variable: IGF-1

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.129 ^a	.017	-.018	3556.4174113 383087	1.702

a. Predictors: (Constant), Hba1c, Umur

b. Dependent Variable: IGF-1

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12270019.366	2	6135009.683	.485	.618 ^b
	Residual	720941973.809	57	12648104.804		
	Total	733211993.175	59			

a. Dependent Variable: IGF-1

b. Predictors: (Constant), Hba1c, Umur

		Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	7526.589	3372.730		2.232	.030		
	Umur	-45.422	46.421	-.129	-.978	.332	.995	1.005
	Hba1c	9.594	205.167	.006	.047	.963	.995	1.005

a. Dependent Variable: IGF-1

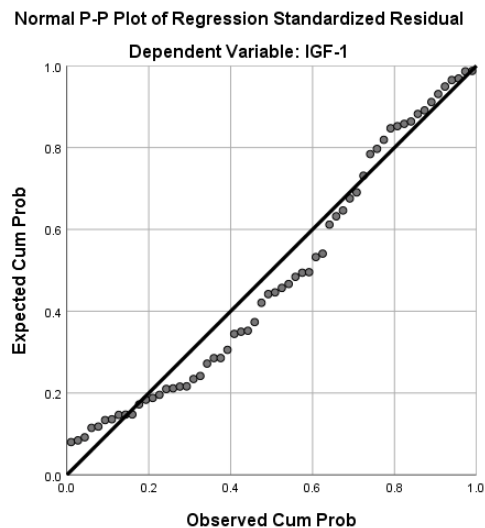
		Collinearity Diagnostics ^a				
		Eigenvalue	Condition	Variance Proportions		
Model	Dimension		Index	(Constant)	Umur	Hba1c
1	1	2.939	1.000	.00	.00	.01
	2	.049	7.720	.02	.20	.75
	3	.012	15.823	.98	.80	.25

a. Dependent Variable: IGF-1

		Residuals Statistics ^a				
		Minimum	Maximum	Mean	Std. Deviation	N
	Predicted Value	3799.418701171875	6364.150878906250	4994.355696398333	456.0333649332865	60
	Residual	-4996.5703125000000	7967.1328125000000	.00000000000003	3495.6194713228760	60
	Std. Predicted Value	-2.620	3.004	.000	1.000	60
	Std. Residual	-1.405	2.240	.000	.983	60

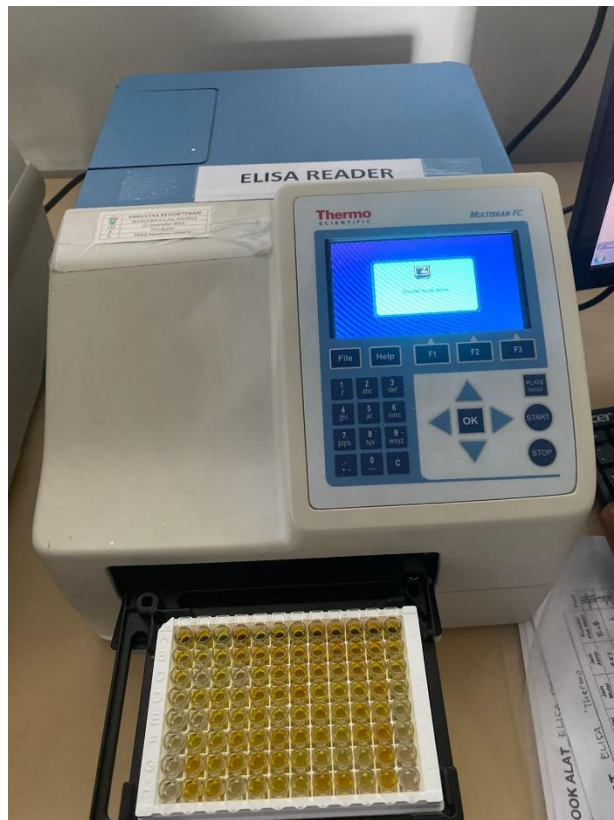
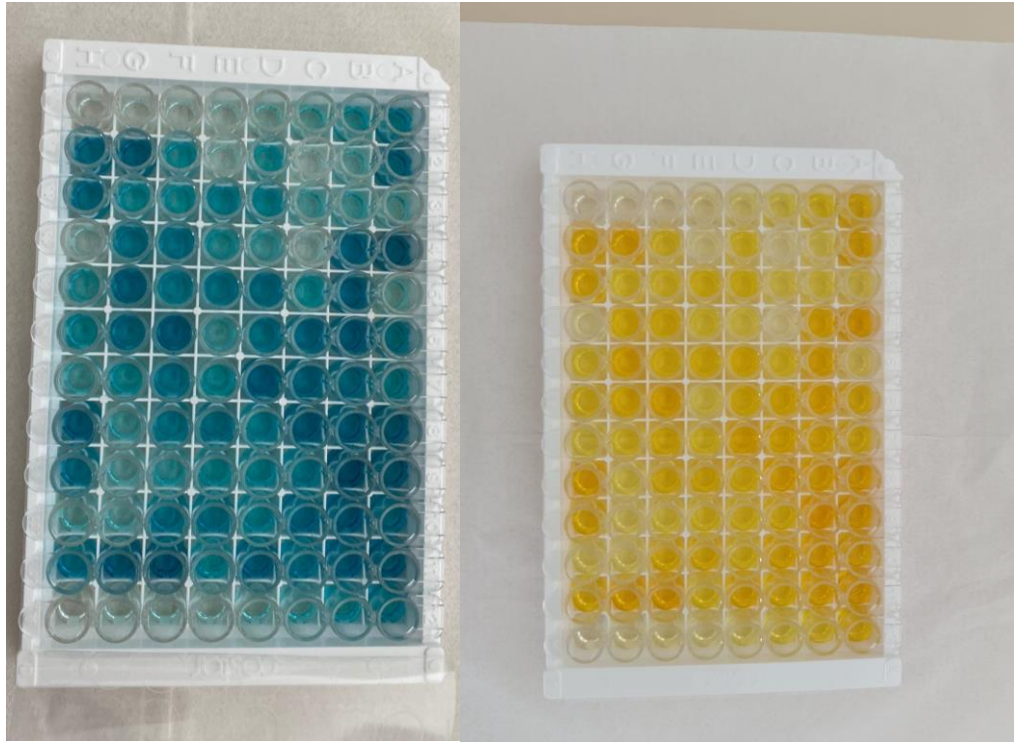
a. Dependent Variable: IGF-1

Charts



Lampiran 5. Dokumentasi





Lampiran 6. Riwayat Hidup (*Curriculum Vitae*)

DATA PRIBADI

Nama : Alya Rahmadiyah Arfan
Tempat, tanggal lahir : Bandung, 13 Desember 1999
Agama : Islam
No. HP/email : 081354990414/ alyarahmadiyah@yahoo.com
Pekerjaan : Mahasiswa S2 Ilmu Biomedik
NIP : -
Pangkat/Golongan : -
Alamat : Jalan Baji Pamuji no.1

Riwayat Pendidikan

No.	Strata	Institusi	Kejuruan/Jurusan	Tempat	Tahun Lulus
1.	SD	SDI Mamajang 1	-	Makassar	2011
2.	SMP	SMP Negeri 3	-	Makassar	2014
3.	SMA	SMA Negeri 3	-	Makassar	2017
4.	S1	Universitas Negeri Makassar	Kimia Sains	Makassar	2021
5.	S2	Universitas Hasanuddin	Ilmu Biomedik	Makassar	2022- Sekarang