

DAFTAR PUSTAKA

1. Gan Wei, Liu Xin-Le, Yu Ti, Li Ting-Ting, Wang Shuang, Deng Jin, Wang Lan-Lan, Cai Jian Pai. (2018). *Urinary 8-oxo-7,8-dihydroguanosine as a Potential Biomarker of Aging*. Department of Laboratory Medicine, West China Hospital, Sichuan University, Chengdu, China. The MOH Key Laboratory of Geriatrics, Beijing Hospital, National Center of Gerontology, Beijing, China. 10.3389/fnagi.2018.00034. eCollection 2018. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
2. Otin C.L., Blasco M.A., Patridge L., Serrano M., Croemer G. (2013). *The Hallmarks of Aging*. 10.1016/j.cell.2013.05.039 [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
3. Liochef S.I. (2015). *Which Is the Most Significant Cause of Aging?*. 10.3390/antiox4040793[[PMC](#)][[PubMed](#)][[Google Scholar](#)].
4. Nieuwenhuis-Mark R. E. (2011). *Healthy aging as disease?* Front. Aging Neurosci. 3:3. 10.3389/fnagi.2011.00003 [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
5. Sprott R. L. (2010). *Biomarkers of aging and disease: introduction and definitions*. Exp. Gerontol. 45, 2–4. 10.1016/j.exger.2009.07.008 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
6. Simm A., Johnson T. E. (2010). *Biomarkers of ageing: a challenge for the future*. Exp. Gerontol. 45, 731–732. 10.1016/j.exger.2010.08.006 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]

7. Banerjee C., Ulloor J., Dillon E. L., Dahodwala Q., Franklin B., Storer T., et al. . (2011). *Identification of serum biomarkers for aging and anabolic response*. *Immun. Ageing*. 8:5. 10.1186/1742-4933-8-5 [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
8. Horvath S. (2013). *DNA methylation age of human tissues and cell types*. *Genome Biol*. 14:R115.10.1186/gb-2013-14-10-r115 [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
9. Catera M., Borelli V., Malagolini N., Chiricolo M., Venturi G., Reis C. A., et al. . (2016). *Identification of novel plasma glycosylation-associated markers of aging*. *Oncotarget* 7, 7455–7468. 10.18632/oncotarget.7059 [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
10. Sebastiani P., Thyagarajan B., Sun F., Schupf N., Newman A. B., Montano M., et al. . (2017). *Biomarker signatures of aging*. *Aging Cell*. 10.1111/accel.12557 [[PMC free article](#)] [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
11. Gan W., Nie B., Shi F., Xu X. M., Qian J. C., Takagi Y., et al. . (2012). *Age-dependent increases in the oxidative damage of DNA, RNA, and their metabolites in normal and senescence-accelerated mice analyzed by lc-ms/ms: urinary 8-oxoguanosine as a novel biomarker of aging*. *Free Radic. Biol. Med*. 52, 1700–1707. 10.1016/j.freeradbiomed.2012.02.016 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
12. Garratt L. W., Mistry V., Singh R., Sandhu J. K., Sheil B., Cooke M. S., et al. . (2010). *Interpretation of urinary 8-oxo-7,8-dihydro-2'-deoxyguanosine is adversely affected by methodological inaccuracies when using a commercial*

- elisa*. Free Radic. Biol. Med. 48, 1460–1464.
10.1016/j.freeradbiomed.2010.02.017 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
13. Andreoli R., Mutti A., Goldoni M., Manini P., Apostoli P., De Palma G. (2011). *Reference ranges of urinary biomarkers of oxidized guanine in (2'-deoxy)ribonucleotides and nucleic acids*. Free Radic. Biol. Med. 50, 254–261.
10.1016/j.freeradbiomed.2010.11.009 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
14. Fumagalli M, Rossiello F, Clerici M, Barozzi S, Cittaro D, Kaplunov JM, Bucci G, Dobрева M, Matti V, Beausejour CM, et al. (2012). *Telomeric DNA damage is irreparable and causes persistent DNA-damage-response activation*. Nat Cell Biol. 14:355–365. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
15. Hewitt G, Jurk D, Marques FD, Correia-Melo C, Hardy T, Gackowska A, Anderson R, Taschuk M, Mann J, Passos JF. (2012). *Telomeres are favoured targets of a persistent DNA damage response in ageing and stress-induced senescence*. Nat Commun. 3:708. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
16. Hekimi S, Lapointe J, Wen Y. (2011). *Taking a “good” look at free radicals in the aging process*. Trends Cell Biol. 21:569–576. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
17. Ristow M, Schmeisser S. (2011). *Extending life span by increasing oxidative stress*. Free Radic Biol Med. 51:327–336. [[PubMed](#)] [[Google Scholar](#)]
18. Nakano M., Kawanishi Y., Kamohara S., Uchida Y., Shiota M., Inatomi Y., et al. . (2003). *Oxidative DNA damage (8-hydroxydeoxyguanosine) and body iron*

- status: a study on 2507 healthy people.* Free Radic. Biol. Med. 35, 826–832.
10.1016/S0891-5849(03)00432-5 [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
19. Guo C.Z., Ding P., Xie C., Ye C., Ye M., Pan C., Cao X., Zhang S., Zheng S. (2017) *Potential application of the oxidative nucleic acid damage biomarkers in detection of disease.* 8: 75767-75777.10.18632/oncotarget.20801. [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
20. Tranfo G., Paci E., Carrieri M., Marchetti E., Sisto R., Gherardi M., Costabile F., Ancona C., Pignini D. (2019). *Levels of Urinary Biomarkers of Oxidatively Generated Damage to DNA and RNA in Different Groups of Workers Compared to General Population.* Int. J. Environ. Res. Public Health. 10.3390/ijerph16162995. [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
21. Evans, M.D.; Sapparbaev, M.; Cooke, M.S. (2010). *DNA repair and the origins of urinary oxidized 2'-deoxyribonucleosides.* Mutagenesis. 25, 433–442. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]
22. Il'yasova, D.; Scarbrough, P.; Spasojevic, I. (2012). *Urinary biomarkers of oxidative status.* Clin. Chim. Acta. 413, 1446–1453. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]
23. Jacob, K.D.; Noren Hooten, N.; Trzeciak, A.R.; Evans, M.K. (2013). *Markers of oxidant stress that are clinically relevant in aging and age-related disease.* Mech. Ageing Dev. 134, 139–157. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]
24. Prasad, S.; Gupta, S.C.; Tyagi, A.K. (2017). *Reactive oxygen species (ROS) and cancer: Role of antioxidative Nutraceuticals.* Cancer Lett. 387, 95–105. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]

25. Cooke, M.S.; Olinski, R.; Loft, S. (2008). *Measurement and Meaning of Oxidatively Modified DNA Lesions in Urine*. *Cancer Epidemiol. Biomark. Prev.* 17, 3–14. [[Google Scholar](#)] [[CrossRef](#)]
26. Matt, S.; Hofmann, T.G. (2016). *The DNA damage-induced cell death response: A roadmap to kill cancer cells*. *Cell. Mol. Life Sci.* 73, 2829–2850. [[Google Scholar](#)] [[CrossRef](#)]
27. Z. Radak and I. Boldogh. (2010). “8-Oxo-7,8-dihydroguanine: links to gene expression, aging, and defense against oxidative stress” . *Free Radical Biology and Medicine*, vol. 49, no. 4, pp. 587–596. [[Google Scholar](#)]
28. F Safnas.; Thowfeik, F.S.; Merino Edward J. (2016). *Excessive Reactive Oxygen Species and Exotic DNA Lesion as an Exploitable Liability*. *Biokimia*. 10. 1021/acs.biochem.6b00703 [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]
29. Singh A.; Kukreti Ritushree.; Saso L.; Kukreti Shrikant. (2019). *Oxidative Stress: Role and Response of Short Guanine Tracts at Genomic Locations*. *Int. J. Mol.* 20(17), 4258. 10.3390/ijms20174258. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)]
30. Menon R. (2014). *Oxidative Stress Damage as a Detrimental Factor in Preterm Birth Pathology*. 10.3389/fimmu.2014.00567. [[Google Scholar](#)] [[CrossRef](#)] [[PubMed](#)].
31. .Simm, A., and Johnson, T. E. (2010). Biomarkers of ageing: a challenge for the future. *Exp. Gerontol.* 45, 731–732. doi: 10.1016/j.exger.2010.08.006.
32. .Zahrt TC, Deretic V. 2002. Reactive nitrogen and oxygen intermediates and bacterial defenses: unusual adaptations in *Mycobacterium tuberculosis*.

- Antioxid. Redox Signal. 4:141–159.
33. .Ehrt S, Schnappinger D. 2009. Mycobacterial survival strategies in the phagosome: defence against host stresses. *Cell. Microbiol.* 11:1170 –1178.
 34. .Voskuil MI, Bartek IL, Visconti K, Schoolnik GK. 2011. The response of *Mycobacterium tuberculosis* to reactive oxygen and nitrogen species. *Front. Microbiol.* 2:105. doi:10.3389/fmicb.2011.00105.
 35. .Walker L, Lowrie DB. 1981. Killing of *Mycobacterium microti* by immunologically activated macrophages. *Nature* 293:69 –71.
 36. .Chan J, Xing Y, Magliozzo RS, Bloom BR. 1992. Killing of virulent *Mycobacterium tuberculosis* by reactive nitrogen intermediates produced by activated murine macrophages. *J. Exp. Med.* 175:1111–1122.
 37. .Haghdoust S, Sjolander L, Czene S, Harms-Ringdahl M. 2006. The nucleotide pool is a significant target for oxidative stress. *Free Radic. Biol. Med.* 41:620 –626.
 38. Neeley WL, Essigmann JM. 2006. Mechanisms of formation, genotoxicity, and mutation of guanine oxidation products. *Chem. Res. Toxicol.* 19:491–505..
 39. Wallace SS. 2002. Biological consequences of free radical-damaged DNA bases. *Free Radic. Biol. Med.* 33:1–14.
 40. Yanofsky C, Cox EC, Horn V. 1966. The unusual mutagenic specificity of an *E. coli* mutator gene. *Proc. Natl. Acad. Sci. U. S. A.* 55:274 –281.
 41. .Demple B, Harrison L (2004) Repair of oxidative damage to DNA: enzymology and biology. *Annu Rev Biochem* 63: 915-948.
 42. .Shibutani S, Takeshita M, Grollman AP (2001) Insertion of specific bases during

- DNA synthesis past the oxidation-damaged base 8-oxodG. *Nature* 349: 431-434.
43. .Seeberg E, Eide L, Bjoras M (2005) The base excision repair pathway. *Trends Biochem Sci* 20: 391-397.
44. .Cheng, K. C., Cahill, D. S., Kasai, H., Nishimura, S., and Loeb, L. A. (1992). 8-hydroxyguanine, an abundant form of oxidative DNA damage, causes g—t and a—c substitutions. *J. Biol. Chem.* 267, 166–172..
45. .Tanaka, M., Chock, P. B., and Stadtman, E. R. (2007). Oxidized messenger rna induces translation errors. *Proc. Natl. Acad. Sci. U.S.A.* 104, 66–71. doi: 10.1073/pnas.0609737104.
46. .David, S. S., O’Shea, V. L., and Kundu, S. (2007). Base-excision repair of oxidative DNA damage. *Nature.* 447, 941–950. doi: 10.1038/nature05978
47. .Cooke, M. S., Evans, M. D., Herbert, K. E., and Lunec, J. (2000). Urinary 8-oxo-2’-deoxyguanosine—source, significance and supplements. *Free Radic. Res.* 32, 381–397. doi: 10.1080/10715760000300391.
48. .Garratt, L. W., Mistry, V., Singh, R., Sandhu, J. K., Sheil, B., Cooke, M. S., et al. (2010). Interpretation of urinary 8-oxo-7,8-dihydro-2’- deoxyguanosine is adversely affected by methodological inaccuracies when using a commercial elisa. *Free Radic. Biol. Med.* 48, 1460–1464. doi: 10.1016/j.freeradbiomed.2010.02.017
49. .Gan, W., Nie, B., Shi, F., Xu, X. M., Qian, J. C., Takagi, Y., et al. (2012). Age-dependent increases in the oxidative damage of DNA, rna, and their metabolites

- in normal and senescence-accelerated mice analyzed by lc-ms/ms: urinary 8-oxoguanosine as a novel biomarker of aging. *Free Radic. Biol. Med.* 52, 1700–1707. doi: 10.1016/j.freeradbiomed.2012.02.016.
50. .Andreoli, R., Mutti, A., Goldoni, M., Manini, P., Apostoli, P., and De Palma, G. (2011). Reference ranges of urinary biomarkers of oxidized guanine in (2'-deoxy)ribonucleotides and nucleic acids. *Free Radic. Biol. Med.* 50, 254–261. doi: 10.1016/j.freeradbiomed.2010.11.009.
51. .Nakano, M., Kawanishi, Y., Kamohara, S., Uchida, Y., Shiota, M., Inatomi, Y., et al. (2003). Oxidative DNA damage (8-hydroxydeoxyguanosine) and body iron status: a study on 2507 healthy people. *Free Radic. Biol. Med.* 35, 826–832. doi: 10.1016/S0891-5849(03)00432-5.
52. .Nakano, M., Kawanishi, Y., Kamohara, S., Uchida, Y., Shiota, M., Inatomi, Y., et al. (2003). Oxidative DNA damage (8-hydroxydeoxyguanosine) and body iron status: a study on 2507 healthy people. *Free Radic. Biol. Med.* 35, 826–832. doi: 10.1016/S0891-5849(03)00432-5.
53. Nieuwenhuis-Mark, R. E. (2011). Healthy aging as disease? *Front. Aging Neurosci.* 3.:3. doi: 10.3389/fnagi.2011.00003
54. Simm, A., and Johnson, T. E. (2010). Biomarkers of ageing: a challenge for the future. *Exp. Gerontol.* 45, 731–732. doi: 10.1016/j.exger.2010.08.006
55. .Pilger, A., Germadnik, D., Riedel, K., Meger-Kossien, I., Scherer, G., and Rudiger, H. W. (2001). Longitudinal study of urinary 8-hydroxy-2'-deoxyguanosine excretion in healthy adults. *Free Radic. Res.* 35, 273–280. doi: 10.1080/10715760100300811

56. Gan, W., Nie, B., Shi, F., Xu, X. M., Qian, J. C., Takagi, Y., et al. (2012). Age-dependent increases in the oxidative damage of DNA, rna, and their metabolites in normal and senescence-accelerated mice analyzed by lc-ms/ms: urinary 8-oxoguanosine as a novel biomarker of aging. *Free Radic. Biol. Med.* 52, 1700–1707. doi: 10.1016/j.freeradbiomed.2012.02.016

LAMPIRAN

Lampiran 1. Biodata Peneliti



Nama Lengkap : Dirgantara
Stambuk : C011171527
Tempat/Tanggal Lahir : Palu, 28 Oktober 1999
Agama : Islam
Suku : Bugis
Alamat : Jl Monginsidi Baru, Perumahan Puri Mutiara (Mutiara 3 No.29)
Nama Ayah : Hasyim Hadaddo
Nama Ibu : Anita Bugiswati Noerdin
Alamat Orang Tua : Jl Anoa 1 No.5, Palu, Sulawesi Tengah
Pekerjaan Orang Tua

- Ayah : Wiraswasta
- Ibu : IRT

Anak ke : 4 dari 4 Bersaudara
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Riwayat Pendidikan Formal

Jenjang	Institusi	Bidang Ilmu / Jurusan	Tahun Masuk	Tahun Lulus
SD	SDN 3 Palu	-	2005	2011
SMP	SMPN Madani Palu	-	2011	2014
SMA	SMAN Madani Palu	-	2015	2017
SMA	SMAN Madani Palu	IPA	2015	2017
S1	Universitas Hasanuddin	Pendidikan Kedokteran	2017	Sekarang

Lampiran 2. Surat Rekomendasi Penelitian



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS HASANUDDIN
FAKULTAS KEDOKTERAN
DEPARTEMEN ILMU KESEHATAN MASYARAKAT DAN ILMU KEDOKTERAN KOMUNITAS
Kampus Unhas Tamalanrea Gedung FK Lt.II Telp. 5040011 e-mail ikmikkfkuh@gmail.com

Nomor : 6355/UN4.14.7/PT.01.04/2020
Lampiran : -
Hal : Penelitian

Kepada Yang Terhormat,
Kepala Balai Paru
Kota Makassar
di-
Makassar

Dengan hormat,

Bersama surat ini kami mohon kesediaan Bapak menerima Mahasiswa dari fakultas Kedokteran Universitas Hasanuddin yang tersebut di bawah ini :

Nama : Dirgantara
Stambuk : C011171527

Untuk mengadakan penelitian di tempat Bapak/Ibu dalam rangka penyelesaian studinya, dan yang bersangkutan diwajibkan menyusun skripsi yang berjudul :


“Perbandingan kadar 8-oxo-7,8-Dihydroguanosine yang terdapat pada Urin sebagai biomarker penuaan antara penderita TB paru dan orang sehat”

Memenuhi maksud tersebut diatas, Ketua Departemen IKM & IKK telah menyetujui proposal penelitian yang diajukan oleh mahasiswa yang bersangkutan.

Demikian surat penelitian ini, atas bantuan dan kerjasama yang baik, kami ucapkan terima kasih.

Makassar, 24 Agustus 2020

Depart IKM & IKK FK . Unhas
Ketua,


Dr. dr. Sri Ramadhany, M. Kes
Nip : 19711021 200212 2003

Lampiran 3. Kuesioner Pasien TB Dan Kontrol / Orang Sehat

(.....) Kode Sampel							
NAMA							
UMUR							
							JAWABAN
PENDIDIKAN TERAKHIR	1. SD	2.SMP	3.SMA	4.S1	5.S2	6.S3	
PEKERJAAN	1.PNS	2.PEG. SWASTA	3.BURUH,TANI, NELAYAN	4.SOPIR, OJEK, GRAB	5. SERABU TAN	6 MENGANG GUR	
GAYA HIDUP	1.OLAH RAGA TERATUR	2. TDK TERATUR	3. MEROKOK	4. TDK MEROKOK			... DAN ...
STATUS GIZI MAKAN SIANG KEMARIN	1.NASI,	2.SAYUR	3.IKAN/DAGING	4.BUAH	5.SUSU		
EKONOMI	1.PBI PENERIMA BANTUAN IURAN BPJS	2. PENGHASILAN SEBULAN Rp. < 5 JUTA	3. PENGHASILAN SEBULAN RP. 5-10 JUTA	4. PENGHASILAN SEBULAN > 10 JUTA			

Lampiran 4. Human 8-oxo-gsn ELISA Kit

**FOR RESEARCH USE ONLY.
NOT FOR USE IN DIAGNOSTIC PROCEDURES.**

Human 8-oxo-gsnELISA Kit

Cat.No: MBS3803566

Storage: 2-8°C.

validity: six months.

The sensitivity by this assay is 0.1ng/mL

Standard concentration was followed by: 20, 10, 5, 2.5, 1.25, 0ng/mL

Both intra-assay CV and inter-assay CV is less than 15%.

Intended use

This 8-OXO-GSN ELISA kit is intended Laboratory for Research use only and is not for use in diagnostic or therapeutic procedures. The Stop Solution changes the color from blue to yellow and the intensity of the color is measured at 450 nm using a spectrophotometer. In order to measure the concentration of 8-OXO-GSN in the sample, this 8-OXO-GSN ELISA Kit includes a set of calibration standards. The calibration standards are assayed at the same time as the samples and allow the operator to produce a standard curve of Optical Density versus 8-OXO-GSN concentration. The concentration of 8-OXO-GSN in the samples is then determined by comparing the O.D. of the samples to the standard curve.

Sample collection and storages

Plasma

Collect plasma using EDTA or heparin as an anticoagulant. Centrifuge samples for 30 minutes at 3000×g at 2-8°C within 30 minutes of collection. Store samples at -20°C or -80°C. Avoid repeated freeze-thaw cycles.

Cell culture supernate and other biological fluids

Remove particulates by centrifugation and assay immediately or aliquot and store samples at -20°C or -80°C. Avoid repeated freeze-thaw cycles.

Serum

Use a serum separator tube and allow samples to clot for 30 minutes before centrifugation for 10 minutes at approximately 3000×g. Remove serum and assay immediately or aliquot and store samples at -20°C or -80°C. Avoid repeated freeze-thaw cycles.

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Note: The samples should be centrifuged adequately and no hemolysis or granule was allowed.

Materials required but not supplied

1. Standard microplate reader(450nm).
2. Precision pipettes and Disposable pipette tips.
3. 37 °C incubator.

Precautions

1. Do not substitute reagents from one kit to another. Standard, conjugate and microplates are matched for optimal performance. Use only the reagents supplied by manufacturer.
2. Do not remove microplate from the storage bag until needed. Unused strips should be stored at 2-8°C in their pouch with the desiccant provided.
3. Mix all reagents before using.

Remove all kit reagents from refrigerator and allow them to reach room temperature (20-25°C)

Materials supplied

Name	96 determinations	48 determinations
Microelisa strip plate	12*8 strips	12*4 strips
Standard	0.3ml*6 vials	0.3ml*6 vials
Sample diluent	6.0ml*1 vial	3.0ml*1 vial
HRP-Conjugate reagent	10.0ml*1 vial	5.0ml*1 vial
20X Wash solution	25ml*1 vial	15ml*1 vial
Chromogen Solution A	6.0ml*1 vial	3.0ml*1 vial
Chromogen Solution B	6.0ml*1 vial	3.0ml*1 vial
Stop Solution	6.0ml*1 vial	3.0ml*1 vial
Closure plate membrane	2	2
User manual	1	1
Sealed bags	1	1

Reagent preparation

20x wash solution: Dilute with Distilled or deionized water 1:20.

Assay procedure

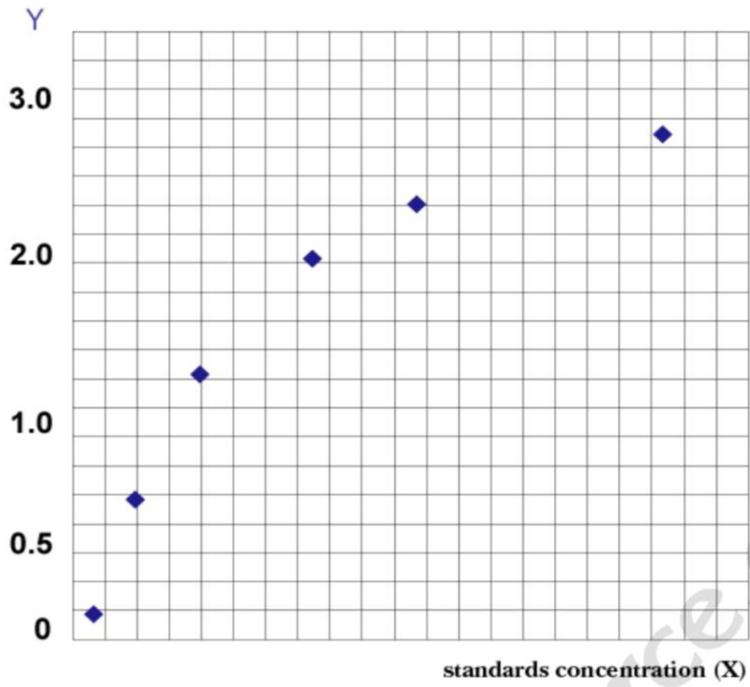
1. Prepare all reagents before starting assay procedure. It is recommended that all Standards and Samples be added in duplicate to the Microelisa Strip plate.
2. Add standard: Set Standard wells, testing sample wells. Add standard 50µl to standard well.
3. Add Sample: Add testing sample 10µl Then add sample diluent 40µl to testing sample well; Blank well doesn't add anything.
4. Add 100µl of HRP-conjugate reagent to each well, cover with an adhesive strip and incubate for 60 minutes at 37°C.
5. Aspirate each well and wash, repeating the process four times for a total of five washes. Wash by filling each well with Wash Solution (400µl) using a squirt bottle, manifold dispenser or auto washer. Complete removal of liquid at each step is essential to good performance. After the last wash, remove any remaining Wash Solution by aspirating or decanting. Invert the plate and blot it against clean paper towels.
6. Add chromogen solution A 50µl and chromogen solution B 50µl to each well. Gently mix and incubate for 15 minutes at 37°C. **Protect from light.**
7. Add 50µl Stop Solution to each well. The color in the wells should change from blue to yellow. If the color in the wells is green or the color change does not appear uniform, gently tap the plate to ensure thorough mixing.
8. Read the Optical Density (O.D.) at 450 nm using a microtiter plate reader within 15 minutes.

Calculation of results

1. This standard curve is used to determine the amount in an unknown sample. The standard curve is generated by plotting the average O.D. (450 nm) obtained for each of the six standard concentrations on the vertical (Y) axis versus the corresponding concentration on the horizontal (X) axis.
2. First, calculate the mean O.D. value for each standard and sample. All O.D. values, are subtracted by the mean value of the zero standard before result interpretation. Construct the standard curve using graph paper or statistical software.
3. To determine the amount in each sample, first locate the O.D. value on the Y-axis and extend a horizontal line to the standard curve. At the point of intersection, draw a vertical line to the X-axis and read the corresponding concentration.
4. Any variation in operator, pipetting and washing technique, incubation time or temperature, and kit

age can cause variation in result. Each user should obtain their own standard curve.

5. Standard curve



FOR RESEARCH USE ONLY; NOT FOR THERAPEUTIC OR DIAGNOSTIC APPLICATIONS! PLEASE READ THROUGH ENTIRE PROCEDURE BEFORE BEGINNING!

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Lampiran 5. Data Penelitian

**PERBANDINGAN 8-OXO-7,8-DIHYDROGUANOSINE 8-OXOGSN
SEBAGAI BIOMARKER MOLEKULER USIA FISILOGIS ANTARA
PENDERITA TB PARU DENGAN ORANG SEHAT**

KODE	SEX	UMUR	PEND.	PEKERJ	GAYA HIDUP	KONSUMSI GIZI	EKONO MI	PENG HASILAN (Jt)	ELISA
T1	L	30	3	1	TIDAK MEROKOK	KURANG	PBI	5	0,1178 / 1,21
T2	P	43	3	3	MEROKOK	CUKUP	PBI	10	0,1106 / 1,10
T3	L	31	1	2	MEROKOK	KURANG	PBI	5	0,337 / 1,49
T4	L	40	2	4	TIDAK MEROKOK	CUKUP	PBI	10	0,1375 / 1,49
T5	L	70	3	3	TIDAK MEROKOK	CUKUP	PBI	5	0,1264 / 1,33
T6	L	69	2	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1342 / 1,44
T7	L	49	1	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,1257 / 1,32
T8	P	60	1	1	TIDAK MEROKOK	KURANG	PBI	5	0,331 / 1,43
T9	P	66	3	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,952 / 0,88
T10	P	50	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1311 / 1,40
T11	L	46	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1144 / 1,16
T12	L	42	1	2	TIDAK MEROKOK	CUKUP	PBI	<5	0,1592 / 1,81
T13	P	53	3	3	TIDAK MEROKOK	CUKUP	PBI	<5	0,1219 / 1,26
T14	L	63	1	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1271 / 1,34
T15	P	30	2	4	TIDAK MEROKOK	KURANG	PBI	<5	0,1030 / 0,99
T16	L	68	-	1	TIDAK MEROKOK	KURANG	PBI	<5	0,949 / 0,87

T17	L	33	-	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1130 / 1,13
T18	L	64	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1221 / 1,27
T19	L	63	2	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,0995 / 0,94
T20	P	48	2	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1281 / 1,36
T21	P	47	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1027 / 0,98
T22	P	61	1	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1187 / 1,22
T23	L	46	1	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1743 / 2,03
T24	P	86	-	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1388 / 1,51
T25	P	53	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1093 / 1,08
T26	P	69	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1167 / 1,19
T27	L	70	1	2	MEROKOK	KURANG	PBI	<5	0,0959 / 0,89
T28	P	37	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1028 / 0,99
T29	P	43	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1066 / 1,04
T30	P	70	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1202 / 1,24
T31	P	54	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1206 / 1,25
T32	P	69	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1153 / 1,17
T33	P	53	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1168 / 1,19
T34	P	42	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1132 / 1,43
T35	P	35	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1065 / 1,04
T36	P	68	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1211 / 1,25
T37	L	60	2	2	TIDAK MEROKOK	KURANG	PBI	<5	0,1257 / 1,32
T38	L	35	2	2	MEROKOK	KURANG	-	<5	0,1204 / 1,24

T39	P	30	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1191 / 1,22
T40	P	47	1	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1270 / 1,34
K1	L	31	3	4	MEROKOK	KURANG	PBI	10	0,1307 / 1,39
K2	L	35	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1322 / 1,42
K3	P	31	3	4	TIDAK MEROKOK	KURANG	PBI	10	0,1262 / 1,33
K4	L	26	3	4	TIDAK MEROKOK	KURANG	PBI	<5	0,1179 / 1,21
K5	P	30	2	4	TIDAK MEROKOK	KURANG	PBI	<5	0,1115 / 1,11
K6	P	45	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1161 / 1,18
K7	P	29	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1246 / 1,30
K8	P	46	2	3	TIDAK MEROKOK	CUKUP	PBI	5	0,1311 / 1,40
K9	P	48	2	3	TIDAK MEROKOK	CUKUP	PBI	5	0,1356 / 1,46
K10	L	41	2	3	MEROKOK	KURANG	PBI	5	0,1319 / 1,41
K11	P	38	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1147 / 1,16
K12	P	45	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1162 / 1,18
K13	P	33	2	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,1107 / 1,10
K14	P	41	3	3	TIDAK MEROKOK	CUKUP	PBI	5	0,1446 / 1,60
K15	P	46	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1264 / 1,33
K16	L	39	2	3	TIDAK MEROKOK	KURANG	PBI	5	0,1287 / 1,36
K17	P	39	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1152 / 1,17
K18	L	27	3	4	MEROKOK	KURANG	PBI	<5	0,1307 / 1,39
K19	P	25	2	4	TIDAK MEROKOK	CUKUP	PBI	5	0,1336 / 1,44
K20	P	31	2	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,1151 / 1,77

K21	L	33	3	3	MEROKOK	KURANG	PBI	10	0,1192 / 1,17
K22	L	25	2	4	TIDAK MEROKOK	KURANG	PBI	<5	0,1188 / 1,22
K23	P	33	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1334 / 1,43
K24	P	40	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1385 / 1,51
K25	P	47	3	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,1320 / 1,41
K26	L	36	2	3	TIDAK MEROKOK	KURANG	PBI	5	0,1314 / 1,40
K27	P	31	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1310 / 1,40
K28	P	45	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1231 / 1,28
K29	L	29	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1270 / 1,34
K30	L	34	2	3	MEROKOK	KURANG	PBI	5	0,1149 / 1,16
K31	L	38	2	3	TIDAK MEROKOK	KURANG	PBI	5	0,1088 / 1,07
K32	P	26	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1443 / 1,59
K33	P	28	3	1	TIDAK MEROKOK	CUKUP	PBI	<5	0,1183 / 1,21
K34	P	37	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1311 / 1,40
K35	P	40	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1246 / 1,30
K36	P	46	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1280 / 1,35
K37	P	48	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1090 / 1,08
K38	P	38	2	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1046 / 1,01
K39	P	32	3	1	TIDAK MEROKOK	KURANG	PBI	<5	0,1292 / 1,37
K40	L	40	3	3	MEROKOK	KURANG	PBI	5	0,1161 / 1,18

KETERANAGAN :

KODE PENDIDIKAN :

1 SD

2. SMP / SMA 3. SARJANA

KODE PEKERJAAN :

1. PENGANGGURAN
2. SERABUTAN DAN SELAIN PNS DAN SWASTA
3. PNS
4. SWASTA.

KODE GAYA HIDUP :

1. MEROKOK
2. TIDAK MEROKOK

KODE KONSUMSI GIZI :

1. KURANG : NASI PLUS SALAH SATU DARI SAYUR BUAH IKAN SUSU
2. CUKUP : YAITU 4 SEHAT TERDIRI DARI : NASI SAYUR IKAN/DAGING BUAH
3. BAIK : 4 SEHAT 5 SEMPURNA DAN SUSU