

DAFTAR PUSTAKA

- Argawal,A. 2015. Anatomy of the Optic Nerve Manual of Neuro-ophthalmology Second Edition. *Jaypee Brothers Medical Pub*, p.100.
- Badan POM RI., 2015. Antituberkulosis. Pusta informasi Obat Nasional dan Badan Pengawas obat dan Makanan. Available at : <http://pionas.pom.go.id/ioni/bab-5-infeksi/52-tuberkulosis-dan-leprosi/521-antituberkulosis>
- Becker, D., Balcer, L. and Galetta, S., 2012. The Neurological Complications of Nutritional Deficiency following Bariatric Surgery. *Journal of Obesity*, 2012, pp.1-8.
- Bobrowitz, I., 1966. Ethambutol in the Retreatment of Pulmonary Tuberculosis. *Annals of the New York Academy of Sciences*, 135(2), pp.796-822.
- Chamberlain, P., Sadaka, A., Berry, S. and Lee, A., 2017. Ethambutol optic neuropathy. *Current Opinion in Ophthalmology*, 28(6), pp.545-551.
- Chan, R . and Kwok A., 2006. Review Article : Ocular toxicity of Ethambutol. *Hong Kong Med J*, 12(1), pp.56-59.
- Chen, S., Lin, M. and Sheu, S., 2015. Incidence and prognostic factor of ethambutol-related optic neuropathy: 10-year experience in southern Taiwan. *The Kaohsiung Journal of Medical Sciences*, 31(7), pp.358-362.
- Choi, S. and Hwang, J., 1997. Optic neuropathy associated with ethambutol in Koreans. *Korean Journal of Ophthalmology*, 11(2), p.106.
- Chung, H., Yoon, Y., Hwang, J., Cho, K., Koh, J. and Kim, J., 2009. Ethambutol-induced toxicity is mediated by zinc and lysosomal membrane permeabilization in cultured retinal cells. *Toxicology and Applied Pharmacology*, 235(2), pp.163-170.
- Cruz, EM., Puentespina, FG., Alejo, KP., Santos-Morabe, ET., and Nanagas, ML., 2010. Color-vision abnormalities among patients undergoing tuberculosis treatment. *Philipp J Ophthalmol*, 35(1), pp.3-9.
- Daube, J. and Rubin, D., 2009. Clinical Neurophysiology. 3rd ed. *New York, N.Y.:* Oxford University Press, pp.311-322.
- Ekayanti, M., Mahama, C. and Ngantung, D., 2021. Normative values of visual evoked potential in adults. *Indian Journal of Ophthalmology*, 69(9), p.2328.
- Ezer, N., Benedetti, A., Darvish-Zargar, M. and Menzies, D., 2013. Incidence of ethambutol-related visual impairment during treatment of active tuberculosis [Review article]. *The International Journal of Tuberculosis and Lung Disease*, 17(4), pp.447-455.
- Firdous, A. and Sarfraz, A., 2016. Comparative Reliability of Pelli-Robson and Lea Number Chart for Contrast Sensitivity Measurement. *Ophthalmology Pakistan*, 6(1), pp.29-32.
- Fletcher, EC., and Chong V., 2007. Retina, in Vaughan and Asbury's General Ophthalmology 17th ed. *McGraw-Hill co., New York*.
- Fraunfelder, F., Sadun, A. and Wood, T., 2006. Update on ethambutol optic neuropathy. *Expert Opinion on Drug Safety*, 5(5), pp.615-618.
- Griffith, DE., Brown-Elliott, BA., McLarty, J., Griffith, L., and Wallace, RJ., 2005. Ethambutol ocular toxicity in treatment regimens for Mycobacterium avium complex lung disease. *American Journal of Respiratory and Critical Care Medicine*, 172(2), pp. 250–253.
- Grzybowski, A., Zülsdorff, M., Wilhelm, H. and Tonagel, F., 2014. Toxic optic neuropathies: an updated review. *Acta Ophthalmologica*, 93(5), pp.402-410.
- Hasrod, N. and Rubin, A., 2016. Defects of colour vision: A review of congenital and acquired colour vision deficiencies. *African Vision and Eye Health*, 75(1).
- Hassounah, IA., Shehata, N., Kimsawatde, GC., and Hudson, AG., 2016.

- Designing and testing single tablet for tuberculosis treatment through electrospinning, Fabrication and Self-Assembly of Nanobiomaterials: Applications of Nanobiomaterials. *Elsevier Inc.*, pp.335-365.
- Heng, J.E., Verwerk, C.K., Lessell, E., Zurakowski, D., Levin, L.A., and Dreyer E.B., 1999. Ethambutol is toxic to retinal ganglion cells via an excitotoxic pathway. *Invest. Ophthalmol. Vis. Sci.*, 40(1), pp.190-195.
- Husain, A.M., 2017. Illustrated Manual of Clinical Evoked Potentials. *Springer Publishing Company*, New York, NY.
- Indrayani, I., Ariswanda, I., Samatra, D., Masputra, A. and Widyadharma, I., 2019. Characteristics of Ethambutol Optic Neuropathy on Tuberculosis Treatment in Sanglah Hospital Denpasar. *International Journal of Medical Reviews and Case Reports*, p.1.
- Irianti, T., Kuswandi., Yasin, N. M., and Kusumaningtyas, R. A., 2016. Mengenal Anti-Tuberkulosis. Yogyakarta: Grafika Indah.
- Jahangir, M., Farwa, U., Mazhar, F., Malik, A., and Ahmad, E., 2016. Metal II complexes of ethambutol as good enzyme inhibitor and promising antioxidant. *Pak J Pharm Sci*, 29(5), pp.1601-1608.
- Jin, K., Lee, J., Rhiu, S. and Choi, D., 2019. Longitudinal evaluation of visual function and structure for detection of subclinical Ethambutol-induced optic neuropathy. *PLOS ONE*, 14(4), p.e0215297.
- Kaimbo Wa Kaimbo, D., Bifuko, Z.A., Longo, M.B., Dralands, L., Missotten, L., 2002. Color Vision in 42 Congolese Patients with Tuberculosis Receiving Ethambutol Treatment. *Bull Soc belge Ophtalmol*, 284, pp.57-62.
- Kanaujia, V., Jain, V., Sharma, K., Agarwal, R., Mishra, P. and Sharma, R., 2019. Ethambutol-induced optic neuropathy in renal disorder: a clinico-electrophysiological study. *Canadian Journal of Ophthalmology*, 54(3), pp.301-305.
- Kandel, H., Adhikari, P., Shrestha, G., Ruokonen, E. and Shah, D., 2012. Visual Function in Patients on Ethambutol Therapy for Tuberculosis. *Journal of Ocular Pharmacology and Therapeutics*, 28(2), pp.174-178.
- Kanski, J., Menon, J., 2003. Neuro-ophthalmology in Clinical Ophthalmology. *Butterworth Heinemann*, pp.596-609.
- Kementerian Kesehatan RI., 2015. Pedoman Nasional Pengendalian Tuberkulosis. *Kementerian Kesehatan RI*, p.1.
- Kementerian Kesehatan RI., 2018. Info Datin Tuberkulosis. *Kementerian Kesehatan RI*, p.1. Available at: <https://www.depkes.go.id/article/view/18030500005/waspada-peningkatan-penyakit-menular.html> <http://www.depkes.go.id/article/view/17070700004/program-indonesia-sehat-dengan-pendekatan-keluarga.html>.
- Kementerian Kesehatan RI., 2020. Profil Kesehatan Indonesia tahun 2019. *Kementerian Kesehatan RI*, p.153. Available at: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf>.
- Kim, K. and Park, S., 2015. Visual function test for early detection of ethambutol induced ocular toxicity at the subclinical level. *Cutaneous and Ocular Toxicology*, 35(3), pp.228-232.
- Kothari, R., Bokariya, P., Singh, S. and Singh, R., 2016. A Comprehensive Review on Methodologies Employed for Visual Evoked Potentials. *Scientifica*, 2016, pp.1-9.
- Koul, P., 2015. Ocular toxicity with ethambutol therapy: Timely recation. *Lung India*, 32(1), p.1.
- Kozak, S., Inderlied, C., Hsu, H., Heller, K. and Sadun, A., 1998. The Role of

- Copper on Ethambutol's Antimicrobial Action and Implications for Ethambutol-induced Optic Neuropathy. *Diagnostic Microbiology and Infectious Disease*, 30(2), pp.83-87.
- Kulkarni, H., Keskar, V., Bavdekar, S. and Gabhale, Y., 2010. Bilateral optic neuritis due to isoniazid (INH). *Indian Pediatrics*, 47(6), pp.533-535.
- Lam, B., 2005. *Electrophysiology Of Vision*. Boca Raton: Taylor & Francis, pp.123-149.
- Leatest.com. 2021. *LEA Contrast Sensitivity*. [online] Available at: <https://www.leatest.com/sites/default/files/pdf/ContrastSensitivity_1.pdf> [Accessed 5 March 2021].
- Lee, J., Han, J., Seo, J., Park, K. and Oh, S., 2018. Diagnostic value of ganglion cell-inner plexiform layer for early detection of ethambutol-induced optic neuropathy. *British Journal of Ophthalmology*, 103(3), pp.379-384.
- Leibold, J., 1966. The Ocular Toxicity of Ethambutol and Its Relation to Dose. *Annals of the New York Academy of Sciences*, 135(2 New Antituber), pp.904-909.
- Leopold, IH., 1978. Zinc deficiency and visual impairment. *American Journal of Ophthalmology*, 85(6), pp. 871–875.
- Liu, GT., Volve, NJ., Galetta, SL., 2001. Visual loss : Optic neuropathies in Neuro-ophthalmology, Diagnosis and Management. *W.B. Saunders company* .
- Louis, B., Cantor, MD., Christopher, J., Rapuano, MD., Colin, A., and McCannel., 2019. American Academy of Ophthalmology : Glaucoma.
- Louis, B., Cantor, MD., Christopher, J., Rapuano, MD., Colin, A., and McCannel., 2019. American Academy of Ophthalmology : Neuro-Ophthalmology.
- Ma, Z., Ginsberg, A. M., and Spigelman, M., 2006. Antimycobacterium agents. *Comprehensive Medicinal Chemistry II*, 7, pp. 699–730.
- MacIntosh, P., 2020. Ethambutol Optic Neuropathy Visual Function and Visual Evoked Potentials. *Journal of Ophthalmology & Clinical Research*, 7(2), pp.1-4.
- Mandal, S., Saxena, R., Dhiman, R., Mohan, A., Padhy, S., Phuljhele, S., Sharma, P. and Guleria, R., 2020. Prospective study to evaluate incidence and indicators for early detection of ethambutol toxicity. *British Journal of Ophthalmology*, 105(7), pp.1024-1028.
- Menon, V., Jain, D., Saxena, R., and Sood, R., 2009. Prospective Evaluation of Visual Function for Early Detection of Ethambutol Toxicity, *British Journal of Ophthalmology*, 93(9), pp. 1251–1254.
- Morgan, J., 2004. Circulation and axonal transport in the optic nerve. *Eye*, 18(11), pp.1089-1095.
- Nathans, J., Thomas, D. and Hogness, D., 1986. Molecular genetics of human color vision: the genes encoding blue, green, and red pigments. *Science*, 232(4747), pp.193-202.
- Newman, SA., Arnold, AC., Friedman, DI., Kline, LB., Rizzo, JF., 2018. American Academy of Ophthalmology : Neuro-Ophthalmology.
- Odom, J., Bach, M., Brigell, M., Holder, G., McCulloch, D., Mizota, A. and Tormene, A., 2016. ISCEV standard for clinical visual evoked potentials: (2016 update). *Documenta Ophthalmologica*, 133(1), pp.1-9.
- Osaguona, V., Sharpe, J., Awaji, S., Farb, R. and Sundaram, A., 2014. Optic Chiasm Involvement on MRI With Ethambutol-Induced Bitemporal Hemianopia. *Journal of Neuro-Ophthalmology*, 34(2), pp.155-158.
- Park, SS., Siegelman, J., and Gragoudas, ES., 2013. The Anatomy and Cell Biology of The Human Retina in Duane's Clinical Ophthalmology. *Lippincott and William Wilkins*.
- Perhimpunan Dokter Paru Indonesia., 2011. Tuberculosis: Pedoman Diagnosis

- dan Penatalaksanaan di Indonesia. Jakarta: Perhimpunan Dokter Paru Indonesia.
- Petrera, J., Fledelius, H. and Trojaborg, W., 1988. Serial pattern evoked potential recording in a case of toxic optic neuropathy due to ethambutol. *Electroencephalography and Clinical Neurophysiology/Evoked Potentials Section*, 71(2), pp.146-149.
- Pineles, S., Wilson, C., Balcer, L., Slater, R. and Galetta, S., 2010. Combined Optic Neuropathy and Myelopathy Secondary to Copper Deficiency. *Survey of Ophthalmology*, 55(4), pp.386-392.
- Polak, B., Leys, M. and van Lith, G., 1985. Blue-Yellow Colour Vision Changes as Early Symptoms of Ethambutol Oculotoxicity. *Ophthalmologica*, 191(4), pp.223-226.
- Prameswari, A., 2018. The Evaluation of Directly Observed Treatment Short-Course (DOTS) Implementation for TB in Hospital X. *Jurnal Medicoeticolegal dan Manajemen Rumah Sakit*, 7(2), pp.93-95.
- Puthalath, AS., Mittal, S., Agarwal, A., Anupam. and Mittal SW., 2018. An Introduction to visual evoked potentials. *Current Indian Eye Research*, 5(2), pp.53-60.
- Robson, A., Nilsson, J., Li, S., Jalali, S., Fulton, A., Tormene, A., Holder, G. and Brodie, S., 2018. ISCEV guide to visual electrodiagnostic procedures. *Documenta Ophthalmologica*, 136(1), pp.1-26.
- Russo, PA., and Chaglasian MA., 1994. Toxic optic neuropathy associated with ethambutol : implications for current therapy. *J Am Optom Assoc*, 65(5), pp.332-338.
- Sadun, A. A. and Wang, M. Y., 2008. 'Ethambutol optic neuropathy: How we can prevent 100,000 new cases of blindness each year'. *Journal of Neuro-Ophthalmology*, 28(4), pp. 265–268.
- Salmon, J., Carmichael, T. and Welsh, N., 1987. Use of contrast sensitivity measurement in the detection of subclinical ethambutol toxic optic neuropathy. *British Journal of Ophthalmology*, 71(3), pp.192-196.
- Schiefer, U., and Hart, W., 2007. Clinical Neuro Ophthalmology : Functional Anatomy of The Human Visual Pathway. *St.Louis,USA*. pp.19-28
- Seok, H., Lee, E., Park, K. and Seo, D., 2018. Basic requirements for visual evoked potentials. *Annals of Clinical Neurophysiology*, 20(1), p.12.
- Song, W., and Si, S., 2017. The rare ethambutol-induced optic neuropathy : A case-report and literature review. *Medicine (United States)*, 96(2), pp. 15–18.
- Srivastava, AK., Goel, UC., Bajaj, S., Singh, KJ., Dwivedi, NC. and Tandon, MP., 1997. Visual evoked responses in ethambutol induced optic neuritis. *J Assoc Physicians India*, 45(11), pp. 847-849.
- Takayama, K., and Kilburn, JO., 1989. Inhibition of synthesis of arabinogalactan by ethambutol in Mycobacterium smegmatis. *Antimicrobial Agents and Chemotherapy*, 33(9), pp. 1493–1499.
- Tsai, R. and Lee, Y., 1997. Reversibility of Ethambutol Optic Neuropathy. *Journal of Ocular Pharmacology and Therapeutics*, 13(5), pp.473-477.
- Vale, JR., 1975. Treatment of tuberculosis, *Tidsskrift for den Norske Laegeforening*, 95(34–36), pp. 1991–1992.
- Walsh, P., 2005. The clinical role of evoked potentials. *Journal of Neurology, Neurosurgery & Psychiatry*, 76(suppl_2), pp.ii16-ii22.
- Weinstein, J.M., 1987. Adler's Physiology of the Eye (Clinical Application). *American Journal of Ophthalmology*, 104(1), p.99.
- Wong, J., 2013. Detection of Early Ethambutol Ocular Toxicity: Ishihara Pseudoisochromatic Plates versus the Farnsworth D-15 Hue Test. *Journal*

- of Neurophysiology and Neurological Disorders*,
World Health Organization., 2021. Global Tuberculosis Report 2021. *World Health Organization*, pp. 5-9.
- Yang, H., Park, M., Lee, J., Lee, C., Park, J. and Hwang, J., 2016. Incidence of toxic optic neuropathy with low-dose ethambutol. *The International Journal of Tuberculosis and Lung Disease*, 20(2), pp.261-264.
- Yang, Y., Zhao, J., Xiao, F., Zhao, H., Dai, Y., 2019. Effect of high-order aberrations on pattern-reversal visual evoked potentials. *Vision Res.* 161, 52–59.
- Yiannikas, C., Walsh, J. and McLeod, J., 1983. Visual Evoked Potentials in the Detection of Subclinical Optic Toxic Effects Secondary to Ethambutol. *Archives of Neurology*, 40(10), pp.645-648.
- Yoon, Y., Jung, K., Sadun, A., Shin, H. and Koh, J., 2000. Ethambutol-Induced Vacuolar Changes and Neuronal Loss in Rat Retinal Cell Culture: Mediation by Endogenous Zinc. *Toxicology and Applied Pharmacology*, 162(2), pp.107-114.
- Zaher, A., 2012. Visual and Brainstem Auditory Evoked Potentials in Neurology. *EMG Methods for Evaluating Muscle and Nerve Function*, pp.281-290.
- Zumla, Al., Gillespie, SH., Hoelscher, M., Philips, PP., Cole, ST., Abubakar, I., McHugh, TD., Schito, M., Maeurer, M., and Nunn, A., 2014. New antituberculosis drugs, regimens, and adjunct therapies : needs, advances, and future prospects. *The Lancet infectious diseases*, 14(4), pp.327-340.

LAMPIRAN




REKOMENDASI PERSETUJUAN ETIK

Nomor : 504/UN4.6.4.5.31/ PP36/ 2021

Tanggal: 18 Agustus 2021

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

No Protokol	UH21060387	No Sponsor	Protokol
Peneliti Utama	dr. Arandz Ruttu	Sponsor	
Judul Peneliti	Pengaruh Terapi Etambutol terhadap Nervus Optik ditinjau dari Amplitudo dan Latensi Visual Evoked Potential dibandingkan dengan Tes Penglihatan Warna Farnsworth Munsell ID-15 serta Tes Sensitivitas Kontras LEA Low Contrast Flip Chart		
No Versi Protokol	1	Tanggal Versi	18 Juni 2021
No Versi PSP	1	Tanggal Versi	18 Juni 2021
Tempat Penelitian	RSUD Labuang Baji dan Balai Besar Kesehatan Paru Makassar		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 18 Agustus 2021 sampai 18 Agustus 2022	Frekuensi review lanjutan
Ketua Komisi Etik Penelitian Kesehatan FKUH	Nama Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)	Tanda tangan 	
Sekretaris Komisi Etik Penelitian Kesehatan FKUH	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

FORMULIR PERSETUJUAN

Saya yang bertanda tangan di bawah ini :

Nama :

Umur : tahun

Alamat :

Telepon/HP :

Menyatakan bersedia untuk berpartisipasi pada penelitian ini yang berjudul :

“Pengaruh Terapi Etambutol terhadap Nervus Optik ditinjau dari Amplitudo dan Latensi *Visual Evoked Potential*, Tes Penglihatan Warna Farnsworth Munsell D-15, serta Tes Sensitivitas Kontras LEA *Low Contrast Flip Chart*“

Setelah mendengar/membaca dan mengerti penjelasan yang diberikan mengenai tujuan dan manfaat yang akan didapatkan pada penelitian ini, khususnya bagi kemajuan ilmu kedokteran.

Makassar,

Saksi I

Saksi II

(.....)

(.....)

Penanggung jawab penelitian :

dr. Arandz Ruttu
BTP Blok A No. 192
Kota Makassar
Telp. 082393277740

Penanggung jawab medik :

Dr. dr. Yunita, Sp.M(K), M.Kes
Perumahan Citra Garden Blok L1 No.1 Cluster Golden Tulip
Kabupaten Gowa
Telp. 08152541665

DISETUJUI OLEH KOMISI PENELITIAN
KESEHATAN FAKULTAS
KEDOKTERAN UNHAS
TGL.....2021

OUTPUT DATA ANALISIS

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for AMPLI_BASELINE	.102	38	.200*	.920	38	.010
Standardized Residual for AMPLI_1	.125	38	.142	.937	38	.033
Standardized Residual for AMPLI_2	.084	38	.200*	.963	38	.241

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

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for LATEN_BASELINE	.187	38	.002	.883	38	.001
Standardized Residual for LATEN_1	.274	38	.000	.763	38	.000
Standardized Residual for LATEN_2	.215	38	.000	.881	38	.001

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual for LEA_2	.508	38	.000	.439	38	.000

a. Lilliefors Significance Correction

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	LATENSI VEP BASELINE - LATENSI VEP BULAN 1	-3.1368	4.8588	.7882	-4.7339	-1.5398	-3.980	37	.000
Pair 2	LATENSI VEP BASELINE - LATENSI VEP BULAN 2	-7.5053	7.4842	1.2141	-9.9653	-5.0453	-6.182	37	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 2	LEA CONTRAST BASELINE - LEA CONTRAST BULAN 2	-0.1973%	0.4619%	0.0749%	-0.3492%	0.0455%	-2.63	37	.012

BIODATA PENELITI

Nama Mahasiswa : dr. Arandz Ruttu
Nomor Pokok : C 025172005
Alamat : BTP Blok A No.192, Makassar
Program Pendidikan : Dokter Spesialis Terpadu Fakultas Kedokteran Universitas Hasanuddin
Program Studi : Ilmu Kesehatan Mata
Judul Tesis : Pengaruh Terapi Etambutol terhadap Nervus Optik ditinjau dari Amplitudo dan Latensi Visual Evoked Potential, Tes Penglihatan Warna Farnsworth Munsell D-15, serta Tes Sensitivitas Kontras LEA Low Contrast Flip Chart

1. Riwayat Pendidikan:

NO.	STRATA	INSTITUSI	TEMPAT	TAHUN LULUS
1.	SD	SD Frater Bakti Luhur	Makassar	2002
2.	SLTP	SMP Frater Thamrin	Makassar	2005
3.	SMU	SMA Negeri 17	Makassar	2008
4.	S1	FK Universitas Hasanuddin	Makassar	2012
5.	Profesi Dokter	FK Universitas Hasanuddin	Makassar	2015
6.	PPDS	Bagian Ilmu Kesehatan Mata FK UNHAS	Makassar	Sementara Pendidikan

2. Riwayat Pelatihan

NO.	PELATIHAN	INSTITUSI	TEMPAT	TAHUN

3. Riwayat pekerjaan

NO.	INSTANSI	TEMPAT	KEDUDUKAN	PERIODE
1.	Puskesmas Binamu Kota	Jeneponto	Dokter Umum	2016-2017
2.	RSUD Lanto Dg. Passewang	Jeneponto	Dokter Umum	2016-2017

