DAFTAR PUSTAKA

Agus, R., Fahruddin, dan Irfandi, 2017. Ligasi Gen Rv 1980c Pengkode Potein MPT 64 ke Pgem-T *Mycobacterium tuberculosis* Sebagai Antigen Untuk Immunodiagnostik Tuberkulosis Laten. *Jurnal Alam dan Lingkungan.* 8 (15): 52.

Agus, R., Sjafaraenan, H. Widyastuti, dan A. A. Sabran, 2013. Amplifikasi Gen Pab Pengkode Antigen 38 kDa *M. tuberculosis* Sebagai Kit Diagnostik Tuberkulosis Laten. *Jurnal Alam dan Lingkungan.* 4(7): 26-30.

Bleyendbergh, P.V., 2015. *Diagnosis of Latent Tuberculosis Infection (LTBI)*. Pneumologie. UZ Leuven.

Campbell, N. A., Jane, B.R., Lisa, A.U., Michael, L.C., Steven, A.W., Peter,V.M., Robert, B.J., 2010. *Biologi Edisi Kedelapan Jilid 1*. Erlangga. Jakarta.

Crevel, R. V., T. H. M., Ottenhoff, and J. W. M., Meer. 2002. Innate immunity to *Mycobacterium tuberculosis*. *Clinical Microbiology.* 15(2): 294-309.

Departemen Kesehatan, RI., 2007. *Pharmaceutical Care untuk Penyakit Tuberkulosis*. Direktorat Bina Farmasi Komunitas dan Klinik. Jakarta.

Dinas Kesehatan Kota Makassar, 2017. *Profil Kesehatan Kota Makassar 2017*. Makassar.

Fatchiyah, Estri, L.A., Sri, W. dan Sri, R., 2011. *Biologi Molekuler: Prinsip Dasar Analisis.* Erlangga. Jakarta.

Farmasea, 2012. Ekstraksi DNA. http://farmasea.undip.ac.id/?p=823. *Diakses pada 28 April 2018 pada pukul 20.37 WITA.*

Fine, P.E., 1995. Variation in protection by BCG: implications of and for heterologous immunity. *Lancet*. 346 (8986): 1339–1345.

Goulding CW, Parseghian A, Sawaya MR, Cascio D, Apostol MI, Gennaro ML, Eisenberg D. Crystal structure of a major secreted protein of *Mycobacterium tuberculosis*-MPT63 at 1.5-A resolution. 2002. *Protein Sci*. 11: 2887–2893.

Habibi, S., 2011. *Electroforesis Gel Agarosa*. Universitas Jenderal Soedirman. Purwokerto.

, D. dan Rudiretna, A., 2001. *Prinsip umum dan pelaksanaan polymerase chain reaction (PCR).* Pusat Studi Bioteknologi, Universitas Surabaya. Unitas, 9 (1): 17-29.

Helden, P.D.V., Thomas, C.V., Robin, M.W., and Eileen, G.V.H., 2000. Isolation of DNA from *Mycobacterium tuberculosis. Molecular Medicine.* 54 (12) : 19-28.

Kassaza, K., P. Orikiriza, A. Liosa, J. Bazira, D. Nyehangane, A. L. Page, and Y. Boum, 2014. Lowenstein-Jensen Selective Medium for Reducing Contamination in *M. tuberculosis* Culture. *Journal of Clinical Microbiology*. 52(7) : 2671-2673.

Kimball, J., 2005. *Biologi Edisi Kelima Jilid 3*. Erlangga. Jakarta.

Kementrian Kesehatan RI., 2017. *Infodatin.* Pusatdatin. Jakarta.

Kementrian Kesehatan RI., 2017. *Vaksin TB Protein Sub-Unit sebagai Booster Vaksinasi BCG di Indonesia.* https://www.litbang.depkes.go.id/. Diakses pada 12 April 2018 pukul 14.37 WITA.

Karakousis, P. C., Bishai, W. R., Dorman, S. E. 2004. *Mycobacterium tuberculosis* Cell Envelope Lipids and The Host Immune Response. *Cellular Microbiology*. 6: 105-6.

Kong, H., Chusnheng, D. and Sidong, X., 2014. A Novel Vaccine p846 Encoding Rv3615c, Mtb10.4 and Rv2660c Elicits Robust Immune Response and Alleviates Lung Injury Induced By *Mycobacterium tuberculosis* infection. *Human Vacccine and Immunotherapeutics*. 10 (2): 378-390.

Korb, V.C., Anil, A.C. and Devapregasan, M., 2016. *Mycobacterium tuberculosis* : Manipulator of Protective Immunity. *Molecular Sciences*. 17 (131): 2-9.

Lee, S. V., and Bahaman, A.R., 2010. Modified Gel Preparation For Distinct DNA Fragment Analysis In Agarose Gel Electrophoresis. *Tropical Biomedicine*. 27 (2): 351-354.

Magdeldin, S., 2012. *Gel Electrophoresis-Principles and Basics.* InTech Publisher. Rijeka. Croatia.

Manca, C., Konstantin, L., Harald, G.W., Donatelia, U., Roberto, C. and Maria, L.G., 1997. Molecular Cloning, Purification and Serological Characterization of MPT63, A Novel Antigen Secreted by *Mycobacterium tuberculosis. Invection and Immunity.* 65 (1): 16-23.

McShane, H., 2011. Tuberculosis Vaccine : beyond Bacille Calmette-Gue'rin. *Phil. Trans R. Soc B*. 336: 2782-2789.

S., 2014. *Principle of PCR and Applications*. Univesity Huachiew Chalermprakiet.

sih, N.M., Nurul, W., Kuntaman, Manik, R.W., dan Deby, K., 2013. Polimerase Chain Reaction of *Mycobacterium tuberculois* GYRB Gene

Region For Rapid Screening Test of Pulmonary Tuberculosis. *Folia Medika Indonesia.* 49 (1) : 16-20.

Munoz, S., Rogelio, H.P., Soman, N.A. and Jose, A.E., 2018. Mast Cell Activation by *Mycobacterium tuberculosis* : Mediator Release and Role of CD48. *Journal of Immunology.* 170 (11): 5590-5596.

Mustafa, A.S., 2002. Development of New Vaccines and Diagnostic Reagents Againts Tuberculosis. *Molecular immunology.* 39 : 113-119.

NCBI, 2018. https://www.ncbi.nlm.nih.gov/nucleotide/.

O'Garra, A., Redford, P.S. and Murray, P.J., 2013. The Role Of IL-10 In Immune Regulation During M.Tuberculosis Infection. *Nature Review, Mucosal Immunology*: 49 (3): 261-270.

Perhimpinan Dokter Paru Indonesia, 2012. Tuberkulosis : *Pedoman Diagnosis & Penatalaksanaan di Indonesia. Perhimpunan Dokter Paru di Indonesia.* http://www.klikpdpi.com/. Diakses pada 26 April 2018, 20.15 WITA.

Perhimpinan Dokter Paru Indonesia, 2006. *Tuberkulosis : Pedoman Diagnosis & Penatalaksanaan di Indonesia. Perhimpunan Dokter Paru di Indonesia*. http://www.klikpdpi.com/. Diakses pada 26 April 2018, 20.00 WITA.

Phrma, 2013. *Vaccine Fact Book.* University of Pennsylvania.

Philips, J.A., and Joel, D.E., 2014. Tuberculosis Phatogenesis and Immunity. *Annual Review of Patology Mechanisms of Desease.* 7 : 353-384.

Purwanto, D.A., 2010. *Teknik Optimasi PCR*. Fakultas Farmasi UNAIR Press. Surabaya.

PML Microbiologicals, Inc., 1989. Lowenstein-Jensen Media.

Rinanda, T., 2015. Kajian Molekuler Mekanisme Resistensi *Mycobacterium tuberculosis*. *Jurnal Kesehatan.* 3 :162-167.

Redchuk, T., Natalia, K., Oksana, G., Pavlo, G., Andrii, K., Olena, O., Denis, K. and Serhiy, K., 2012. Expression of *Mycobacterium tuberculosis* Protein MPT63 and MPT83 as A Fusion : Purification, Refolding and Immunological Characterization. *Journal of Applied Biomediicine.* 10 : 169-176.

[illegible]grum, D.S., 2010. *Prinsip Teknologi DNA Rekombinan*. Sekolah Farmasi [illegible]B. Bioteknologi Farmasi-FA 4202.

[illegible]F.V. and Jenni, M.V., 2002. New Vaccines For The Prevention of [illegible]uberculosis. *CID Vaccines* : 35.

Rosilawati, M.L., 2007. Deteksi *Mycobacterium tuberculosis* dan Resistensinya Terhadap Refampisin dengan Metode Nested Polymerase Chain Reaction (PCR) dan Sequencing. *Universa Medicina*. 26 (1): 1-10.

Samal, A., 2012. *Evaluation of Diagnostic Potential of Recombinant MPT63 Protein in Bovine Tuberculosis*. Indian Veterinary Research Institute. Izatnagar.

Surzycki, S., 2000. *Basic Techniques in Molecular Biology*. Springer-Verlag, Berlin, Heidelberg, New York.

Smith, I., 2003. *Mycobacterium tuberculosis* Phatogenesis and Molecular Determinants of Virulence. *Clinical Microbiologi.* 16 (3): 471.

Tarigan, S., 2011. Penggunaan Polymerase Chain Reaction Enzyme Linked Oligonucelotide Sorbent Assay (PCR-ELISA) untuk Deteksi Agen Penyakit. *WARTAZOA* : 21 (1).

Widowati, H., 2012. Tuberkulosis Paru. Karisma Publishing Group. Tangerang Selatan.

Werdhani, R.A., 2014. *Patofisiologis, Diagnosis, dan Klasifikasi Tuberkulosis*. Fakultas Kedokteran Universitas Indonesia.

Weston, K.H., 2006. *Identifying Unknown Bacteria Using Biochemical and Molecular Methods*. Washington University in Saint Louis.

World Health Organitation, 2012. *BCG – The Current Vaccine for Tuberculosis*. *Initiative for Vaccine Research*.

World Health Organitation, 2017. *Global Tuberculosis Report*. World Health Organization.

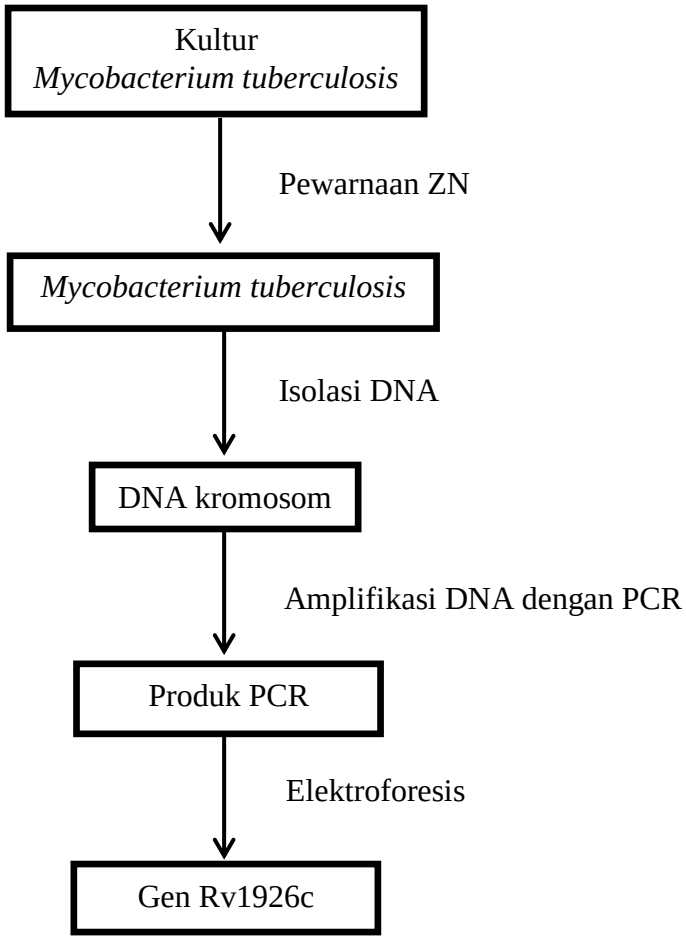
Yuwono, T., 2005. *Biologi Molekuler*. Erlangga: Jakarta.

Young, D., J. Stark and D. Kirschner. 2008. Systems biology of persistent infection: tuberculosis as a case study. *Nature Reviews Microbiology.* 6:520-528.

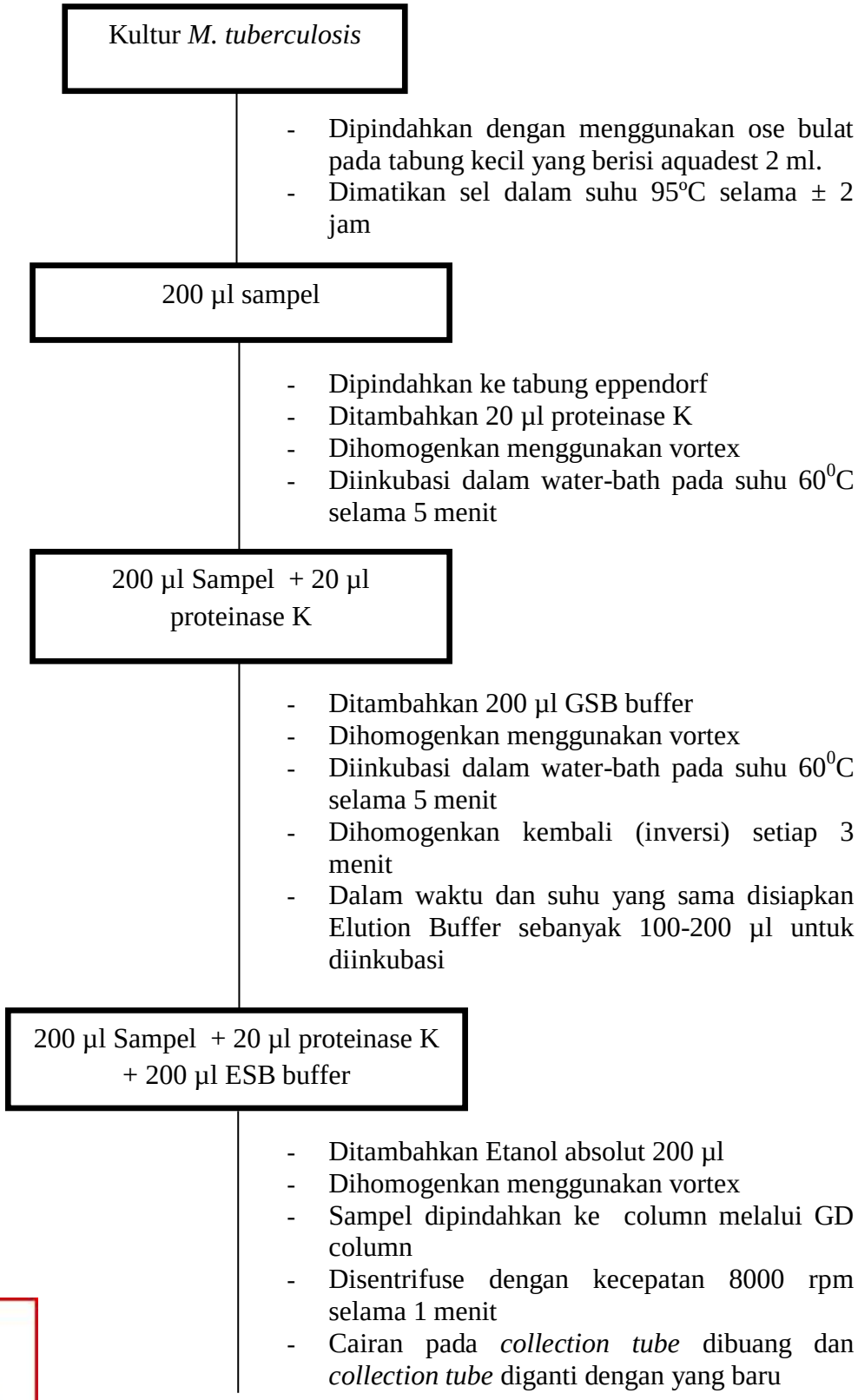
Zhu, B., Hazel, M.D., Tom, H.M.O., Thomas, G.E. and Ying, Z., 2018.. Invited Review Series : Tuberculosis Updates 2018. *Respirology*. 10 : 1-7.

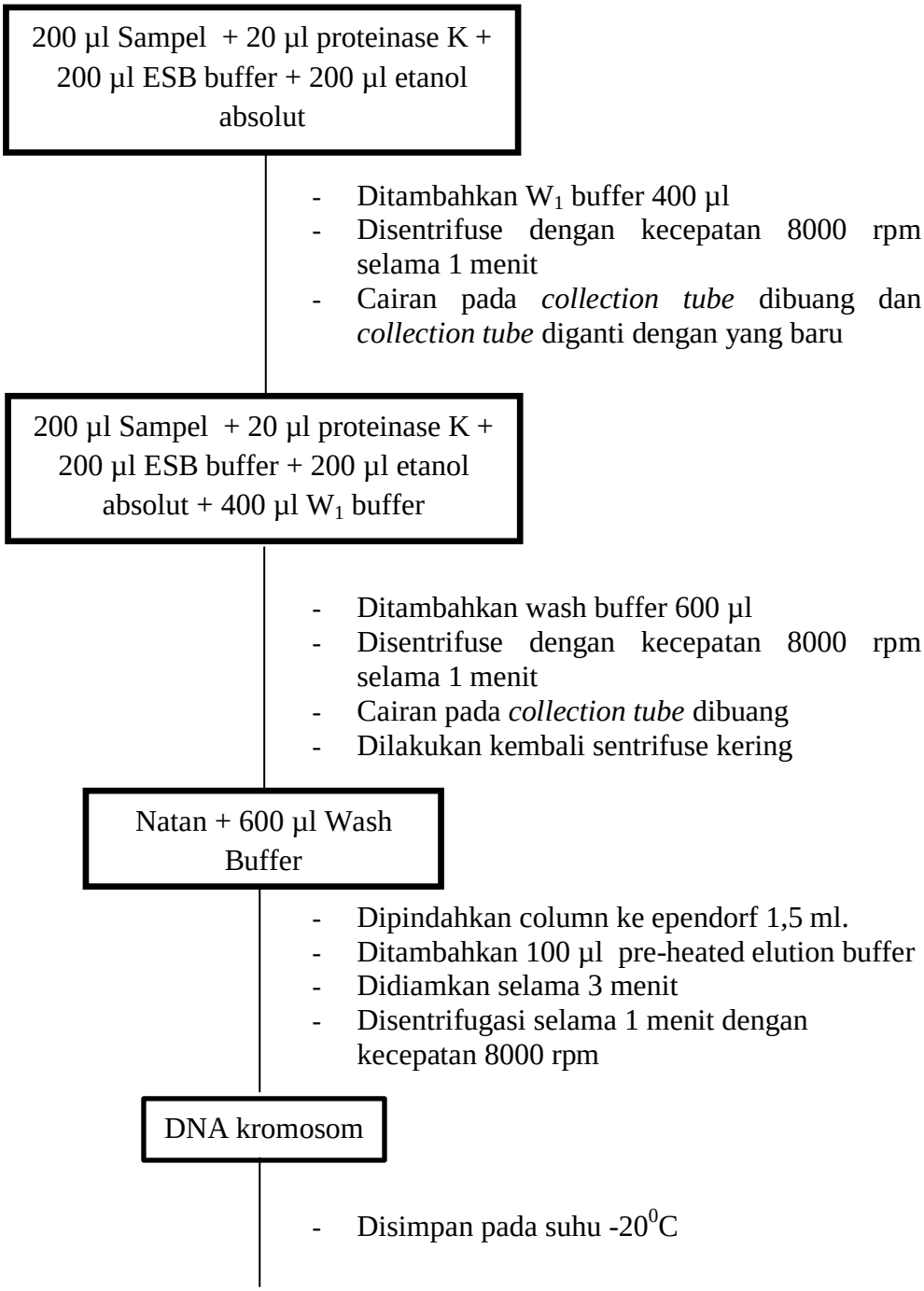
Lampiran

1. **Bagan Kerja Penelitian**

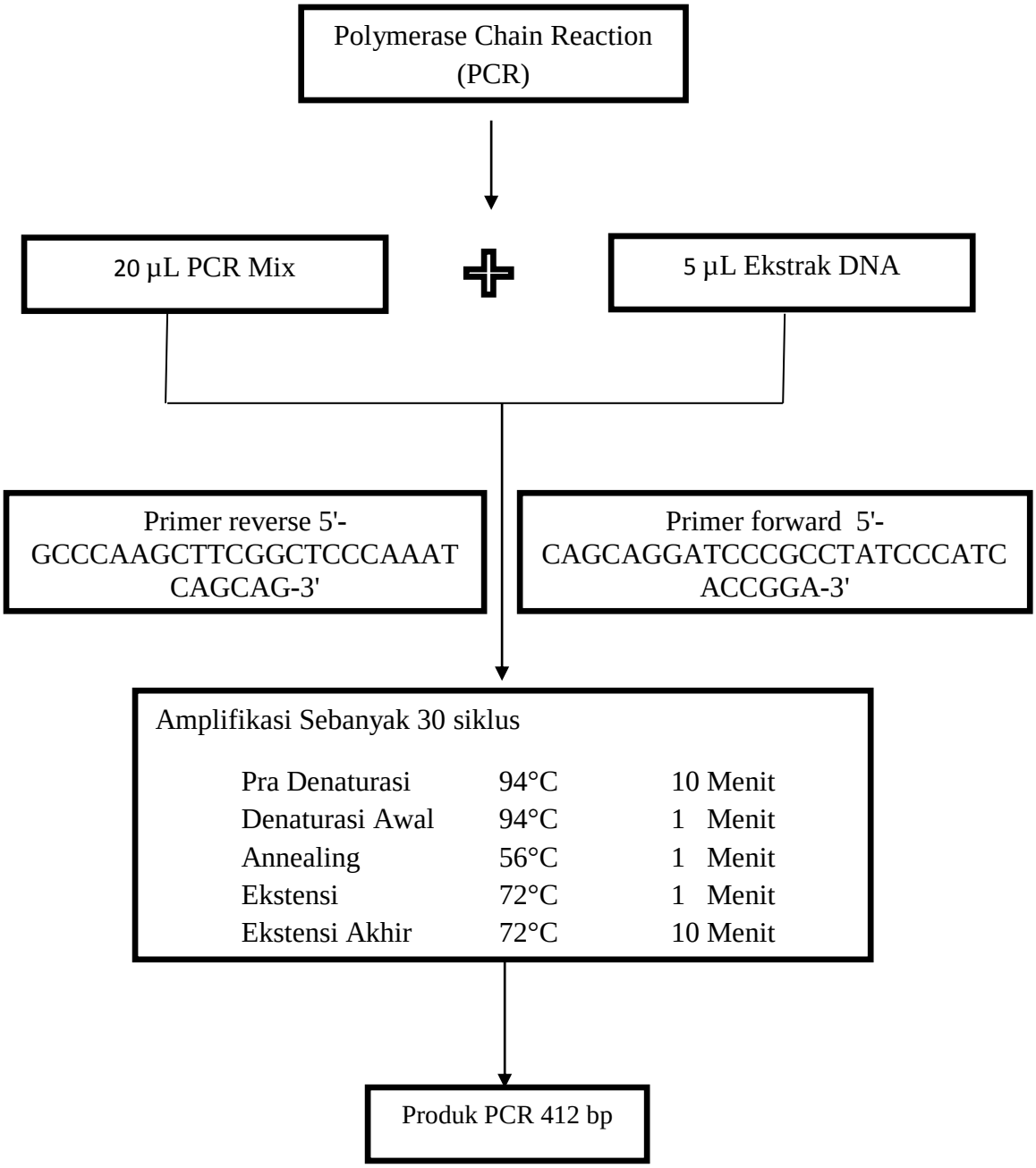


2. Skema Kerja Ekstraksi DNA dengan gSYNC DNA Extraction Kit (Geneaid)





3. Bagan Kerja PCR



4. Komposisi Bahan

a. Media Lowenstein Jensen

LJ	37.5 gr
Aquades	600 ml
Telur Bebek	250 ml
Gliserol	3 ml

b. Pewarnaan Ziehl-Neelsen (ZN)

Carbol Fuhsin	0.3 %
HCL Alkohol	3 %
Metylen Blue	0.3 %

c. Ekstraksi/ Isolasi DNA

Proteinase K	20 µl
ESB Buffer	200 µl
Elution Buffer	100 – 200 µl
Etanol Absolut	200 µl
W_1 Buffer	400 µl
Wash Buffer	600 µl
Pre-heated elution buffer	100 µl

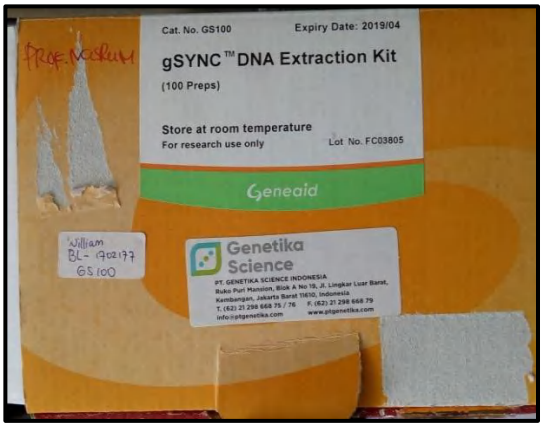
d. PCR Mix

Komposisi : Enzim GoTaq Green Master Mix	12.5 µl (1.5 U)
Primer (Forward)	1.0 µl (10 pmol)
Primer (Reverse)	1.0 µl (10 pmol)
Nuclease free water (DDH_2O)	5.5 µl
Sampel DNA	5 µl

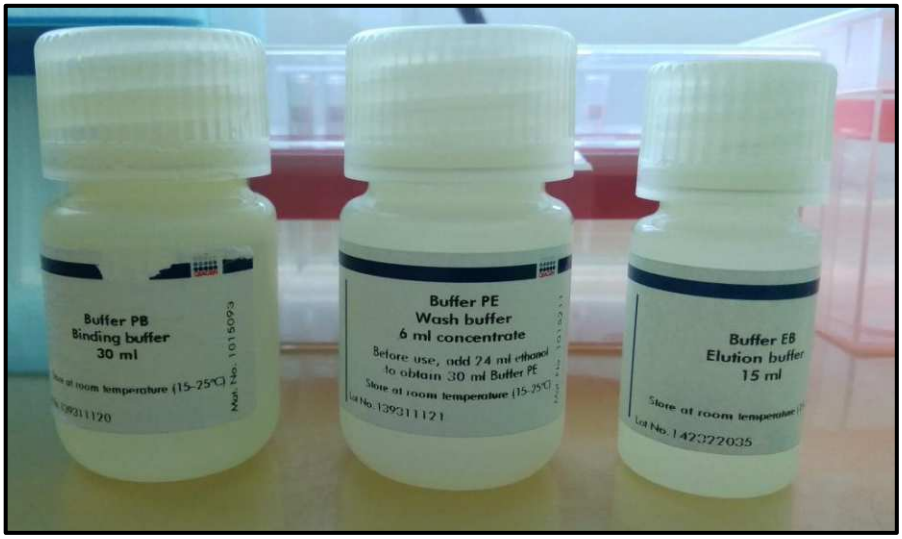
e. Gel Agarosa 2 %

Komposisi :	Agarosa	1.2 gr
	0.5x Tris-Buffer-EDTA	60 ml
	Ethidium Bromide	2 µl

5. Foto bahan yang digunakan



(a) KIT yang digunakan dalam isolasi DNA

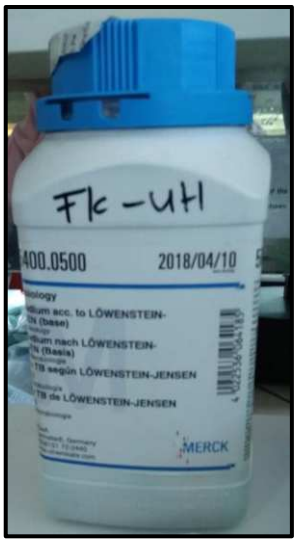


(b) KIT yang digunakan dalam purifikasi

(c) Primer Forward dan primer Reverse

(d) Marker DNA dan Loading buffer

(e) Gel agarosa

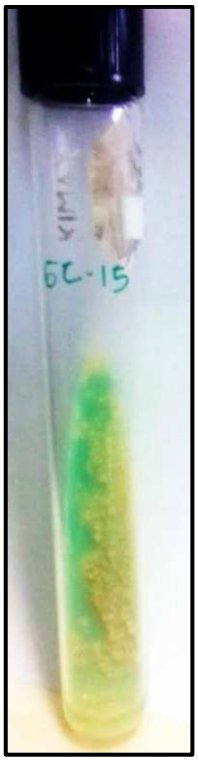


(f) Bubuk LJ

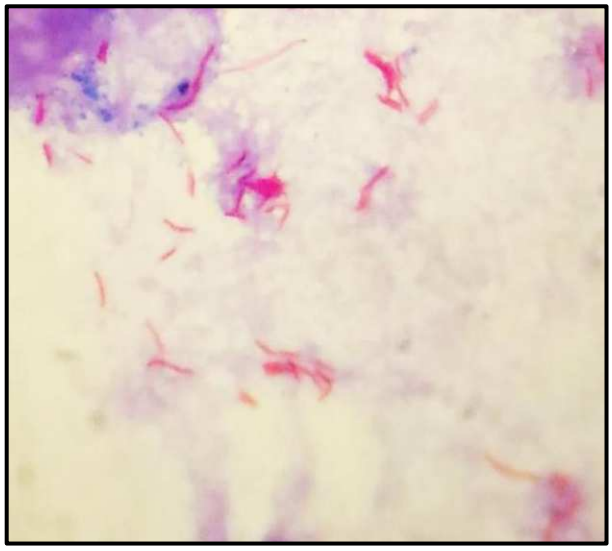
(g) Larutan TBE 0.5x

(h) Ethidium bromida (EtBr)

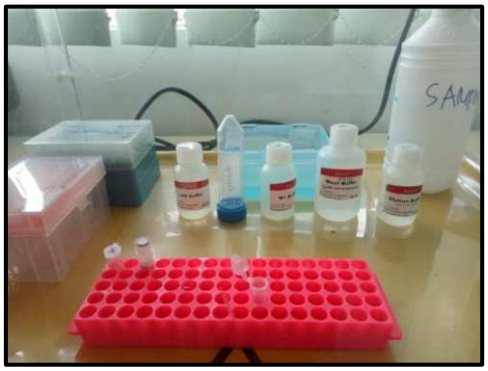
6. Prosedur kerja



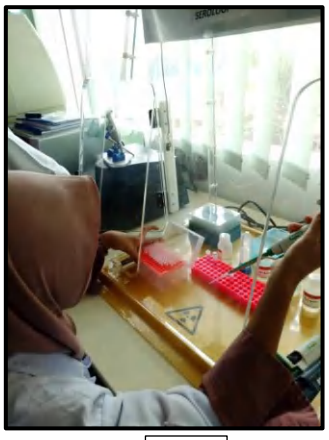
(A) Koloni bakteri yang ditumbuhkan di media LJ



(A) Hasil pengamatan di bawah mikroskop



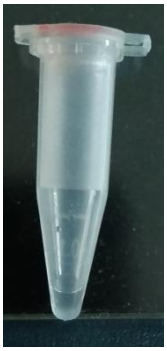
(A)



(B)

(C)

(D)



(E)

Keterangan Foto Isolasi DNA

(A). Kit Isolasi yang digunakan yaitu gSYNC DNA Extraction Kit (Geneaid)

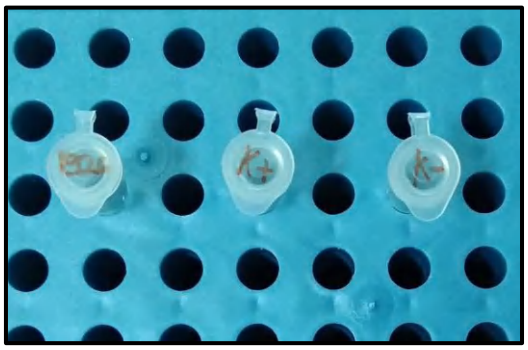
(B). Proses penambahan buffer ke dalam tabung eppendorf.

(C). Sampel dan campuran buffer kit isolasi DNA di dalam tabung eppendorf kemudian dimasukkan dalam water-bath.

(D). Proses sentrifugasi.

(E). Hasil Isolasi DNA.

(A)



(B)

(C)

(D)

(E)

Keterangan Foto Amplifikasi Gen Rv1926c

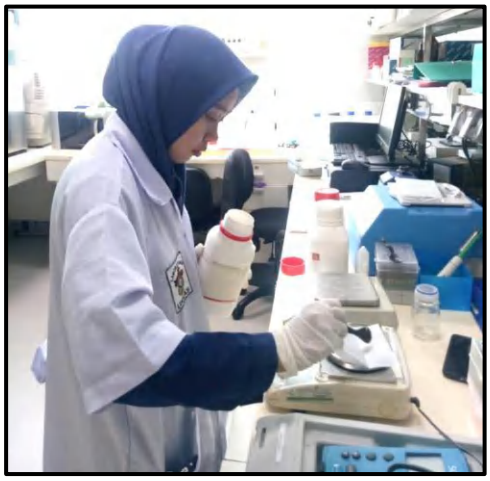
(A).Proses pengerjaan PCR Mix.

(B). Sampel yang akan diamplifikasi.

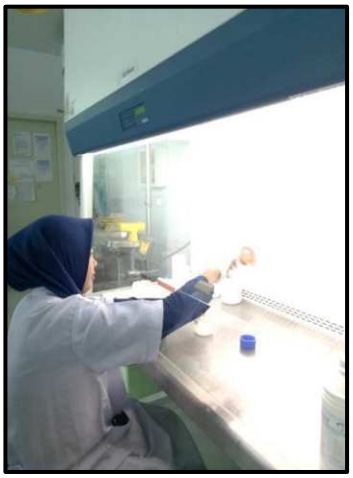
(C). Proses PCR.

imasi PCR.

l Amplifikasi.

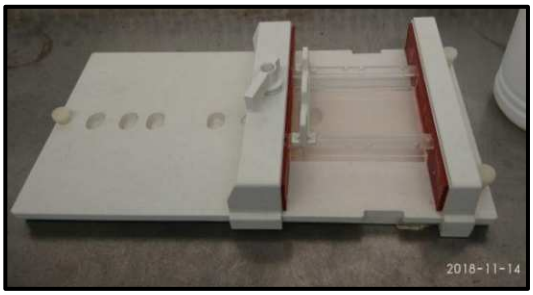


(A)

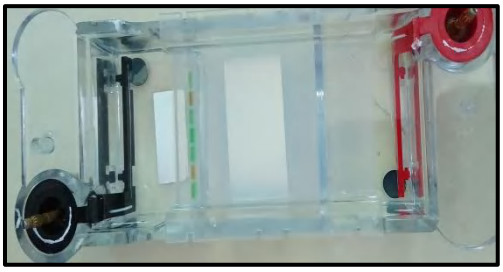


(B)

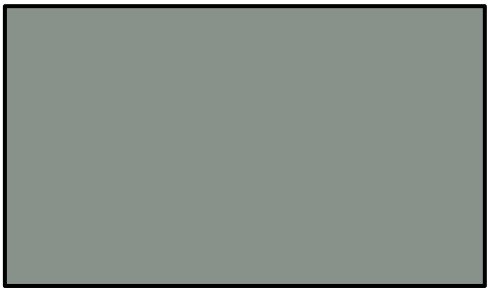
(C)



(D)



(E)



(F)

Keterangan Foto Elektroforesis

(A) Penimbangan gel agarosa 2%.

(B) Proses pelarutan gel agarosa dengan larutan TBE 0.5x dalam botolo reagen.

(C) Pemanasan gel agarosa di dalam microwave.

(D). Gel agarosa padat yang berada dalam cetakan gel dengan sisir gel yang telah diatur.

(E). Gel agarosa yang terendam larutan TBE dan berisi sampel pada sumur gel yang akan dielektroforesis.

(F). Mesin elektroforesis dijalankan dan ditunggu hingga ± 2 jam.