

DAFTAR PUSTAKA

- Aguilar, T.A.F., Navarro, B.C.H., Pérez, J.A.M., 2016. Endogenous Antioxidants: A Review of their Role in Oxidative Stress. A Master Regul. Oxidative Stress - Transcr. Factor Nrf2.
- Allocca, M., Zola, S., Bellosta, P., 2018a. The Fruit Fly, *Drosophila melanogaster*: Modeling of Human Diseases (Part II). *Drosoph. melanogaster - Model Recent Adv. Genet. Ther.*
- Allocca, M., Zola, S., Bellosta, P., 2018b. The Fruit Fly, *Drosophila melanogaster*: The Making of a Model (Part I). *Drosoph. melanogaster - Model Recent Adv. Genet. Ther.*
- Anggraini, S.A., Yuniningsih, S., Sota, M.M., 2017. Pengaruh pH terhadap Kualitas Produk Etanol dari Molasses Melalui Proses Fermentasi. *Reka Buana 2*, 99–105.
- Asri Werdhasari, 2014. Peran Antioksidan Bagi Kesehatan. *J. Biomedik Medisiana Indones.* 3, 59–68.
- Birben, E., Sahiner, U.M., Sackesen, C., Erzurum, S., Kalayci, O., 2012. Oxidative Stress and Antioxidant Defense. *World Allergy Organ.*
- Blackney, M.J., Cox, R., Shepherd, D., Parker, J.D., 2014. Cloning and Expression Analysis of *Drosophila* Extracellular Cu Zn Superoxide Dismutase. *Biosci. Rep.* 34, 851–863.
- Cohen, J.I., Roychowdhury, S., DiBello, P.M., Jacobsen, D.W., Nagy, L.E., 2009. Exogenous Thioredoxin Prevents Ethanol-Induced Oxidative Damage And Apoptosis In Mouse Liver. *Hepatology* 49, 1709–1717.
- Demerec, M., Kaufman, B.P., 1996. *Drosophila* Guide: Introduction to The Genetics and Cytology of *Drosophila melanogaster*, Tenth. ed. Carnegie Institution of Washington, Washington, D.C.
- Devineni, A. V., Heberlein, U., 2012. Acute Ethanol Responses in *Drosophila* are Sexually Dimorphic. *Proc. Natl. Acad. Sci. U. S. A.* 109, 21087–21092.
- Dieterich, S., Bieligg, U., Beulich, K., Hasenfuss, G., Prestle, J., 2015. Gene Expression of Antioxidative Enzymes in Increased Expression of Catalase in the End-Stage Failing Heart. *Am. Hear.*

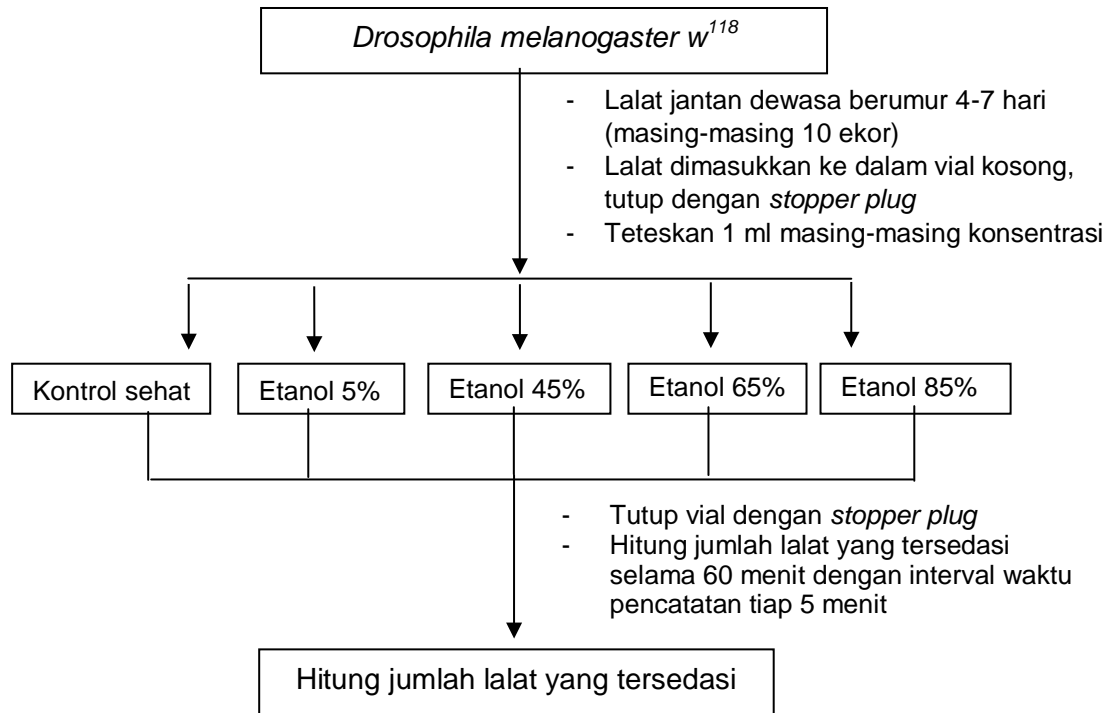
- Edwin, 2018. Pengaruh Reseptor Fagositosis Draper Terhadap Kematian *Drosophila melanogaster* yang Terpapar Alkohol. Universitas Hasanuddin.
- Elmore, S., 2007. Apoptosis : A Review of Programmed Cell Death. *Toxicol. Pathol.* 35, 495–516.
- Fluor, A., Red, T., 2010. Rotor-Gene ® Q MDx User Manual 998.
- Gullan, P.J., Cranston, P.S., 2014. *The Insects An Outline Of Entomology*, 5th ed, John Wiley & Sons, USA.
- Hernandez, S.M., Fernandez, J.B.V., Chavez, J.D., Sanchez, R.C.L., Hernandez, J.A., Ramirez, A.R., 2012. Alcoholism: Common and Oxidative Damage Biomarkers. *J. Clin. Toxicol.* S7, 1–8.
- Hewajuli, D.A., Dharmayanti, N., 2014. Perkembangan Teknologi Reverse Transcriptase-Polymerase Chain Reaction dalam Mengidentifikasi Genom Avian Influenza dan Newcastle Diseases. *Indones. Bull. Anim. Vet. Sci.* 24, 16–29.
- Hotimah, H., Purwatiningsih, Senjarini, K., 2017. Deskripsi Morfologi *Drosophilla melanogaster* Normal (Diptera:Drosophilidae), Strain Sepia dan Plum. *J. Ilmu Dasar* 18, 55–60.
- James, B.P., Staatz, W.D., Wilkinson, S.T., Meuillet, E., Powis, G., 2009. Superoxide Dismutase Is Regulated By Lammer Kinase In *Drosophila* And Human Cells. *Free Radic. Biol. Med.* 46, 821–827.
- Kapasi, A.A., Patel, G., Goenka, A., Nahar, N., Modi, N., Bhaskaran, M., Reddy, K., Franki, N., Patel, J., Singhal, P.C., 2003. Ethanol Promotes T Cell Apoptosis Through The Mitochondrial Pathway. *Immunology* 108, 313–320.
- Karim, K., 2016. *Polymerase Chain Reaction (PCR): Principle and Applications*. Intech 13.
- KEMENKES RI, 2014. *Farmakope Indoensia*, 5th ed. Jakarta.
- Konda Chandramoorthy, H.C., Mallilankaraman, K., Madesh, M., 2012. Ethanol Induced Mitochondrial Induction of Cell Death Pathways Explored. *Trends Alcohol. Liver Dis. Res. - Clin. Sci. Asp.*

- Kulbacka, J., Saczko, J., Chwilkowska, A., Choromanska, A., Skouck, N., 2012. Apoptosis, Free Radicals and Antioxidant Defense in Antitumor Therapy. *Antioxid. Enzym.*
- Kumar, V., Abbas, A.K., Aster, J.C., 2019. *Buku Ajar Patologi Dasar Robbins*, 10th ed. Elsevier Health Sciences, Singapore.
- Landis, G.N., Tower, J., 2005. Superoxide Dismutase Evolution And Life Span Regulation. *Mech. Ageing Dev.* 126, 365–379.
- Liling, S., Roska, T.P., Arfiansyah, R., Maryam, F., Nainu, F., 2021. Pharmacological Effect of *Muntingia calabura* Leaves on The Expression of *sod1* and *sod2* in *Drosophila*. *Biointerface Res. Appl. Chem.* 11, 12985–12992.
- Manisha, Hasan, W., Rajak, R., Jat, D., 2017. Oxidative Stress And Antioxidants: An Overview. *Int. J. Adv. Res. Rev.* 2, 110–119.
- Marks, D.B., Marks, A.D., Smith, C.M., 2020. *Biokimia Kedokteran Dasar: Sebuah Pendekatan Klinis*. EGC, Jakarta.
- Nainu, F., 2018. Review : Penggunaan *Drosophila melanogaster* Sebagai Organisme Model Dalam Penemuan Obat. *J. Farm. Galen. (Galenika J. Pharmacy)* 4, 50–67.
- Nurhayati, B., Darmawati, S., 2017. *Biologi Sel dan Molekuler*. Kemenkes RI, Jakarta.
- Onyekwelu, K.C., 2019. *Ethanol. Psychol. Heal. - Biopsychosoc. Approach.*
- Pandey, K.B., Rizvi, S.I., 2010. Markers of Oxidative Stress in Erythrocytes and Plasma During Aging in Humans. *Oxid. Med. Cell. Longev.* 3, 2–12.
- Parvathi, D., Amritha, A., Paul, S.F., 2009. Wonder Animal Model For Genetic Studies-*Drosophila Melanogaster*—Its Life Cycle And Breeding Methods—A Review. *Sri Ramachandra J. Med.* II, 33.
- Prokop, A., 2015. A Rough Guide To *Drosophila* Mating Schemes (version 6.2). *Neuron* 72, 202–230.
- Purwaningsih, E., 2014. Pemendekan Telomer Dan Apoptosis Telomere Shorthening And Apoptosis. *J. Kedokt. Yars.* 22, 132–141.
- Saikumar, P., Dong, Z., Mikhailov, V., Denton, M., 1999. Apoptosis: Definition, Mechanisms, and Relevance to Disease. *Am. J. Med.* 107.

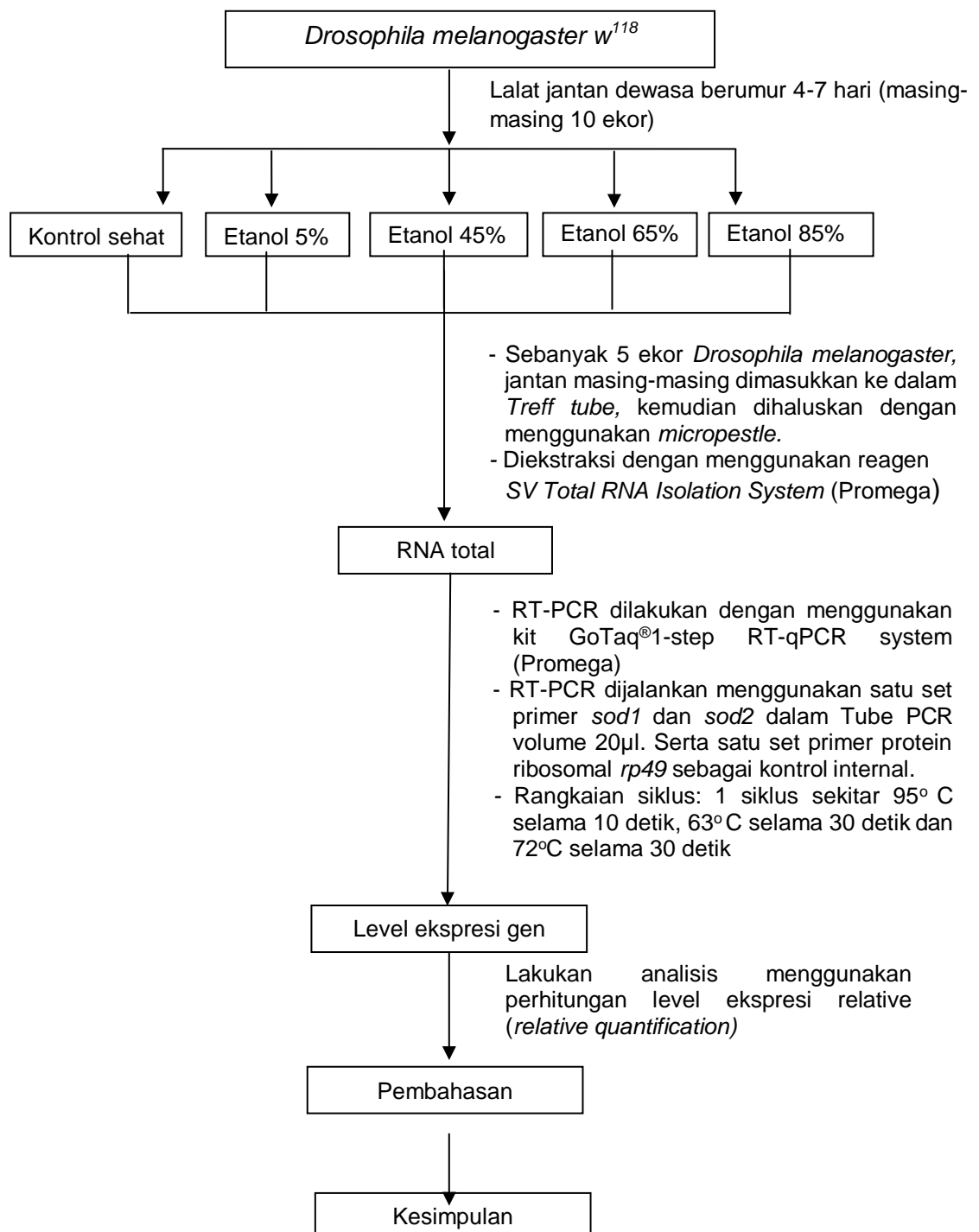
- Sandhu, S., Kollah, A.P., Lewellyn, L., Chan, R.F., Grotewiel, M., 2015. An Inexpensive, Scalable Behavioral Assay For Measuring Ethanol Sedation Sensitivity And Rapid Tolerance In *Drosophila*. *J. Vis. Exp.* 2015, 1–9.
- Scholz, H., Ramond, J., Singh, C.M., Heberlein, U., 2000. Functional Ethanol Tolerance in *Drosophila*. *Neuron* 28, 261–271.
- Tan, S.C., Yiap, B.C., 2009. DNA, RNA, and Protein Extraction: The Past and The Present. *J. Biomed. Biotechnol.* 2009.
- Wang, Y., Branicky, R., Noë, A., Hekimi, S., 2018. Superoxide Dismutases: Dual Roles In Controlling ROS Damage and Regulating ROS Signaling. *J. Cell Biol.* 217, 1915–1928.
- Wen, S.Y., Deng, X.J., Yang, W.Y., Huang, Y.D., Cao, Y., Xia, Q.Y., Xu, P., 2009. Gene Expression Divergence And Evolutionary Analysis Of The Drosomycin Gene Family in *Drosophila melanogaster*. *J. Biomed. Biotechnol.* 2009.
- WHO, 2018. Global Status Report On Alcohol and Health 2018. World Health Organization Press, Switzerland.
- Wu, D., Cederbaum, A.I., 2014. Alcohol, Oxidative Stress, and Free Radical Damage. *Alcohol Res. Heal.* Vol. 27.
- Yusuf, Z., 2010. Polymerase Chain Reaction (PCR). *Saintek* Vol 5, No 6.
- Zelko, I.N., Mariani, T.J., Folz, R.J., 2002. Superoxide Dismutase Multigene Family: A Comparison of The CuZn-SOD (*sod1*), Mn-SOD (*sod2*), and EC-SOD (SOD3) Gene Structures, Evolution, and Expression. *Free Radic. Biol. Med.* 33, 337–349.
- Zhang, Y., Shen, T.T., Liu, S.W., Zhao, J., Chen, W., Wang, H., 2014. Effect of Hawthorn on *Drosophila melanogaster* Antioxidant-Related Gene Expression. *Trop. J. Pharm. Res.* 13, 353–357.

LAMPIRAN

Lampiran 1. Skema Kerja Uji Mortalitas



Lampiran 2. Skema Kerja Isolasi RNA dan Uji PCR



Lampiran 3. Komposisi Pakan *Drosophila melanogaster*

Komposisi pakan *Drosophila melanogaster* untuk 200 ml:

1. Tepung Jagung : 15 g
2. Ragi : 5 g
3. Gula Pasir : 9 g
4. Agar : 1,8 g
5. Metil Paraben : 900 μ L
6. Asam Propionat : 800 μ L
7. Air Steril : ad 200 ml

Lampiran 4. Analisis Data

Tabel 2. Hasil *one-way anova* ekspresi gen *sod1*

<i>ANOVA summary</i>	<i>Value</i>
F	2,835
P value	0,0646
P value summary	ns
Significant diff. among means (P < 0.05)?	No
R squared	0,5415

Tabel 3. Hasil uji lanjutan *tukey* ekspresi gen *sod1*

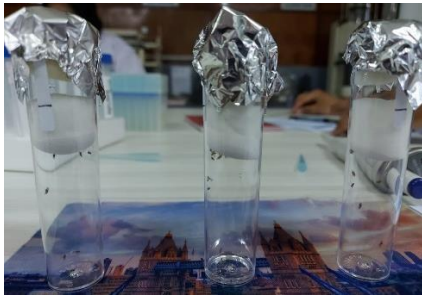
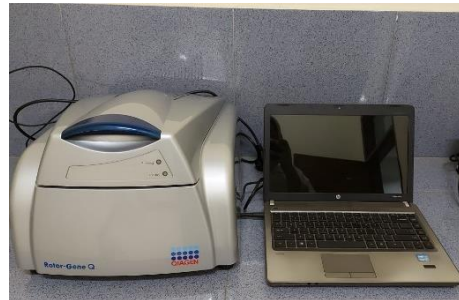
Tukey's Multiple Comparisons Test	Mean Diff	Summary	Adjusted P Value
Kontrol Sehat vs. Etanol 5%	1,323	*	0,0366
Kontrol Sehat vs. Etanol 25%	0,7633	ns	0,3740
Kontrol Sehat vs. Etanol 45%	0,9233	ns	0,2066
Kontrol Sehat vs. Etanol 65%	1,040	ns	0,1279
Kontrol Sehat vs. Etanol 85%	0,7867	ns	0,3451
Etanol 5% vs. Etanol 25%	-0,5600	ns	0,6709
Etanol 5% vs. Etanol 45%	-0,4000	ns	0,8836
Etanol 5% vs. Etanol 65%	-0,2833	ns	0,9696
Etanol 5% vs. Etanol 85%	-0,5367	ns	0,7061
Etanol 25% vs. Etanol 45%	0,1600	ns	0,9977
Etanol 25% vs. Etanol 65%	0,2767	ns	0,9725
Etanol 25% vs. Etanol 85%	0,02333	ns	>0,9999
Etanol 45% vs. Etanol 65%	0,1167	ns	0,9995
Etanol 45% vs. Etanol 85%	-0,1367	ns	0,9989
Etanol 65% vs. Etanol 85%	-0,2533	ns	0,9811

Tabel 4. Hasil *one-way anova* ekspresi gen *sod2*

<i>ANOVA summary</i>	<i>Value</i>
F	3,484
P value	0,0393
P value summary	*
Significant diff. among means (P < 0.05)?	Yes
R squared	0,6129

Tabel 5. Hasil uji lanjutan *tukey* ekspresi gen *sod2*

Tukey's Multiple Comparisons Test	Mean Diff	Summary	Adjusted P Value
Kontrol Sehat vs. Etanol 5%	-0,2133	ns	0,9851
Kontrol Sehat vs. Etanol 25%	-0,3783	ns	0,9030
Kontrol Sehat vs. Etanol 45%	0,3433	ns	0,8977
Kontrol Sehat vs. Etanol 65%	-0,3533	ns	0,8867
Kontrol Sehat vs. Etanol 85%	-0,9767	ns	0,1064
Etanol 5% vs. Etanol 25%	-0,1650	ns	0,9972
Etanol 5% vs. Etanol 45%	0,5567	ns	0,5738
Etanol 5% vs. Etanol 65%	-0,1400	ns	0,9978
Etanol 5% vs. Etanol 85%	-0,7633	ns	0,2735
Etanol 25% vs. Etanol 45%	0,7217	ns	0,4298
Etanol 25% vs. Etanol 65%	0,02500	ns	>0,9999
Etanol 25% vs. Etanol 85%	-0,5983	ns	0,6104
Etanol 45% vs. Etanol 65%	-0,6967	ns	0,3561
Etanol 45% vs. Etanol 85%	-1,320	*	0,0205
Etanol 65% vs. Etanol 85%	-0,6233	ns	0,4641

Lampiran 5. Gambar Penelitian**Gambar 12. Uji Mortalitas****Gambar 13. PCR****Gambar 14. Pembuatan Pakan****Gambar 15. BSC II****Gambar 16. Termomixer****Gambar 17. Mikroskop zoom stereo**