DAFTAR PUSTAKA

Apidianakis, Y. & Rahme, L. G. 2011. Drosophila Melanogaster As A Model For Human Intestinal Infection And Pathology. *Dis Model Mech,* 4**,** 21-30.

Ashique, S., Mishra, N., Garg, A., Sibuh, B. Z., Taneja, P., Rai, G., Djearamane, S., Wong, L. S., Al-Dayan, N., Roychoudhury, S., Kesari, K. K., Slama, P., Roychoudhury, S. & Gupta, P. K. 2023. Recent Updates On Correlation Between Reactive Oxygen Species And Synbiotics For Effective Management Of Ulcerative Colitis. *Front Nutr,* 10**,** 1126579.

Bilen, J. & Bonini, N. M. 2005. Drosophila As A Model For Human Neurodegenerative Disease. *Annu Rev Genet,* 39**,** 153-71.

Ekengren, S. & Hultmark, D. 2001. A Family Of Turandot-Related Genes In The Humoral Stress Response Of Drosophila. *Biochem Biophys Res Commun,* 284**,** 998-1003.

He, J., Li, B., Han, S., Zhang, Y., Liu, K., Yi, S., Liu, Y. & Xiu, M. 2022. Drosophila As A Model To Study The Mechanism Of Nociception. *Front Physiol,* 13**,** 854124.

Jiang, N. M., , F. T., , S. N. M., , R. J. S., Mami Taniuchi, Jennie Z Ma, Jena D Hamadani, Emily S Gurley, Eric R Houpt, Eduardo Azziz-Baumgartner, Rashidul Haque & Jr, A. W. A. P. 2014. Febrile Illness And Pro-Inflammatory Cytokines Are Associated With Lower Neurodevelopmental Scores In Bangladeshi Infants Living In Poverty. *Bmc Pediatrics*.

Korpe, P. S. & Petri, W. A., Jr. 2012. Environmental Enteropathy: Critical Implications Of A Poorly Understood Condition. *Trends Mol Med,* 18**,** 328-36.

Krittika, S. & Yadav, P. 2019. An Overview Of Two Decades Of Diet Restriction Studies Using Drosophila. *Biogerontology,* 20**,** 723-740.

Kwang Pum Lee, S. J. S., Fiona J. Clissold, Robert Brooks, J. William O. Ballard, Phil W. Taylor, & Nazaneen Soran, A. D. R. 2008. Lifespan And Reproduction In Drosophila:

New Insights From Nutritional Geometry. *Pnas Direct Submission*.

Lamiable, O., Meignin, C. & Imler, J. L. 2016. Wntd And Diedel: Two Immunomodulatory Cytokines In Drosophila Immunity. *Fly (Austin),* 10**,** 187-94.

Moffat, J. G., Vincent, F., Lee, J. A., Eder, J. & Prunotto, M. 2017. Opportunities And Challenges In Phenotypic Drug Discovery: An Industry Perspective. *Nat Rev Drug Discov,* 16**,** 531-543.

Mulenga, C., Sviben, S., Chandwe, K., Amadi, B., Kayamba, V., Fitzpatrick, J. A. J., Mudenda, V. & Kelly, P. 2022. Epithelial Abnormalities In The Small Intestine Of Zambian Children With Stunting. *Front Med (Lausanne),* 9**,** 849677.

Owino, V., Ahmed, T., Freemark, M., Kelly, P., Loy, A., Manary, M. & Loechl, C. 2016. Environmental Enteric Dysfunction And Growth Failure/Stunting In Global Child Health. *Pediatrics,* 138.

Periasamy, A., Mitchell, N., Zaytseva, O., Chahal, A. S., Zhao, J., Colman, P. M., Quinn, L. M. & Gulbis, J. M. 2022. An Increase In Mitochondrial Tom Activates Apoptosis To Drive Retinal Neurodegeneration. *Scientific Reports,* 12.

Rambold, A. S., Kostelecky, B., Elia, N. & Lippincott-Schwartz, J. 2011. Tubular Network Formation Protects Mitochondria From Autophagosomal Degradation During Nutrient Starvation. *Proc Natl Acad Sci U S A,* 108**,** 10190-5.

Rera, M., Bahadorani, S., Cho, J., Koehler, C. L., Ulgherait, M., Hur, J. H., Ansari, W. S., Lo, T., Jr., Jones, D. L. & Walker, D. W. 2011. Modulation Of Longevity And Tissue Homeostasis By The Drosophila Pgc-1 Homolog. *Cell Metab,* 14**,** 623-34.

Salameh, E., Morel, F. B., Zeilani, M., Dechelotte, P. & Marion-Letellier, R. 2019. Animal Models Of Undernutrition And Enteropathy As Tools For Assessment Of Nutritional Intervention. *Nutrients,* 11.

Staats, S., Luersen, K., Wagner, A. E. & Rimbach, G. 2018. Drosophila Melanogaster As A Versatile Model Organism In Food And Nutrition Research. *J Agric Food Chem,* 66**,** 3737-3753.

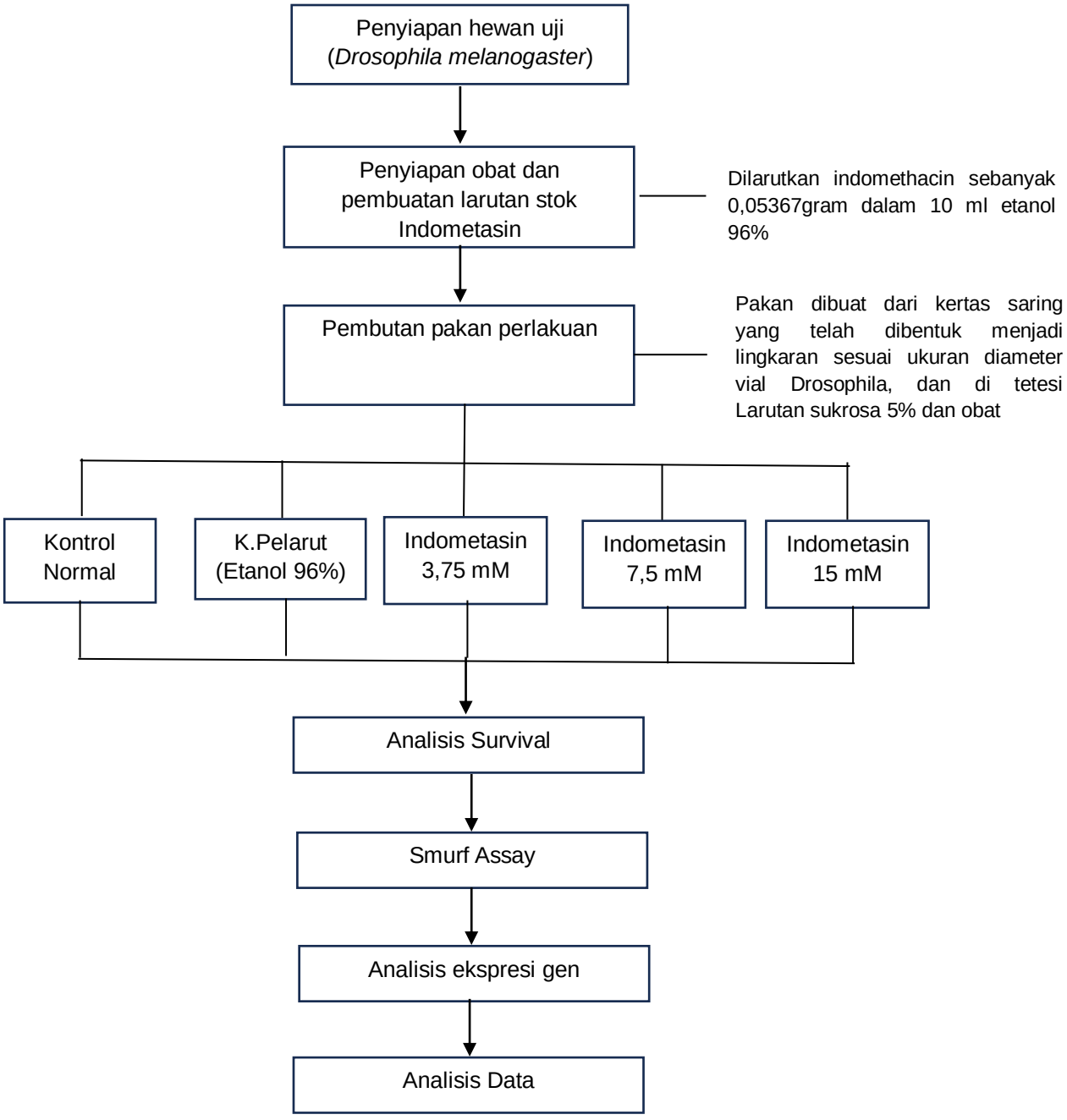
Stephen J. Simpson, D. R. 2009. Macronutrient Balance And Lifespan. *Aging,* Vol. 1 No. 10.

Tauszig-Delamasure, S., Bilak, H., Capovilla, M., Hoffmann, J. A. & Imler, J. L. 2002. Drosophila Myd88 Is Required For The Response To Fungal And Gram-Positive Bacterial Infections. *Nat Immunol,* 3**,** 91-7.

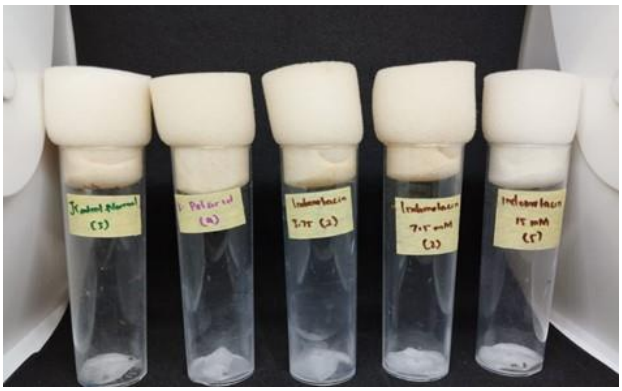
Watanabe, K. & Petri, W. A., Jr. 2016. Environmental Enteropathy: Elusive But Significant Subclinical Abnormalities In Developing Countries. *Ebiomedicine,* 10**,** 25-32.

LAMPIRAN

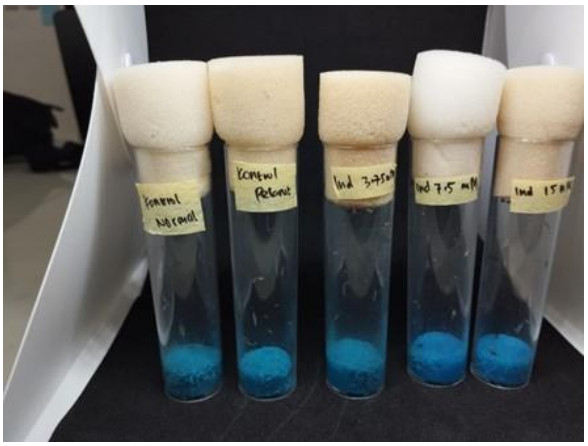
Lampiran 1. Skema Kerja



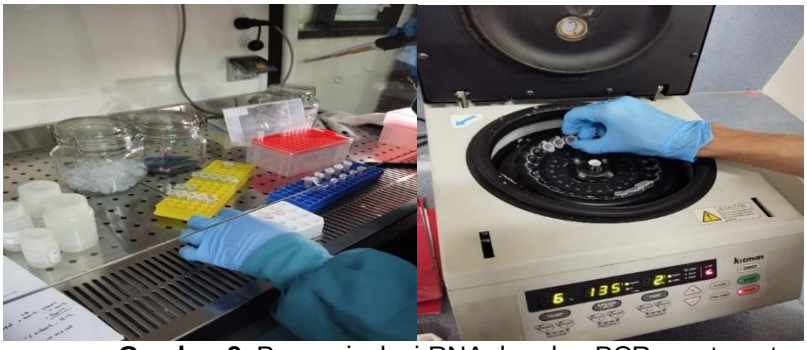
Lampiran 2. Gambar penelitian



Gambar 7. Pengamatan uji Survival pada lalat dewasa yang diberikan indometasin dalam medium pakan kertas saring.



Gambar 8. Pengamatan Uji smurf untuk melihat gangguan integritas usus pada lalat dewasa yang diletakkan dalam medium pakan biru.



Gambar 9. Proses isolasi RNA dan dan PCR gen target

Lampiran 3. Perhitungan konsentrasi Indometasin dalam pakan drosophila

- **Dibuat pengenceran untuk konsentrasi 15 mM**

M $= \frac{gram}{Mr} \times \frac{1000}{v}$

$15 \times 10^{-3} = \frac{gram}{357{,}8} \times \frac{1000}{10\ ml}$

Gram = 0,05 gram = 50 mg (ad 10 ml Etanol 96%)

- **Dibuat pengenceran indometasin untuk konsentrasi 7,5 mM**

V1×N1 = V2×N2

V1× 15 mM = 2 mL × 7,5 mM

V1 = $\frac{2\ \mathrm{mL} \times 7{,}5\ mM}{15\ mM} = 1\ \mathrm{mL}$ larutan indometasin (ad 2 ml Etanol 96%)

Dibuat pengenceran indometasin untuk konsentrasi 3.75 mM

V1×N1 = V2×N2

V1× 7,5 mM = 2 mL × 3,75 mM

V1 = $\frac{52\mathrm{mL} \times 3{,}75\ mM}{7{,}5\ mM} = 1\ \mathrm{mL}$ larutan indometasin (ad 2 mlm Etanol 96%).

Lampiran 4. Analysis Of Variance (ANOVA)

Tabel 2. Hasil perbandingan tukey uji survival Lalat ewasa setelah terpapar Indometasin

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96%	-10.71	-27.80 to 6.371	ns	0.3713
Kontrol Normal vs. Indometasin 3,75 mM	-0.7143	-17.80 to 16.37	ns	>0.9999
Kontrol Normal vs. Indometasin 7,5 mM	-12.38	-27.55 to 2.785	ns	0.1483
Kontrol Normal vs. Indometasin 15 mM	-13.21	-27.32 to 0.8937	ns	0.074
Etanol 96% vs. Indometasin 3,75 mM	10	-9.275 to 29.28	ns	0.555
Etanol 96% vs. Indometasin 7,5 mM	-1.667	-19.26 to 15.93	ns	0.9986
Etanol 96% vs. Indometasin 15 mM	-2.5	-19.19 to 14.19	ns	0.9916
Indometasin 3,75 mM vs. Indometasin 7,5 mM	-11.67	-29.26 to 5.929	ns	0.318
Indometasin 3,75 mM vs. Indometasin 15 mM	-12.5	-29.19 to 4.193	ns	0.2115
Indometasin 7,5 mM vs. Indometasin 15 mM	-0.8333	-15.55 to 13.89	ns	0.9998

Tabel 3. Hasil Perbandingan Tukey Ekspresi gen *totA*

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96%	0.8089	-0.2507 to 1.868	ns	0.1271
Kontrol Normal vs. Indometasin 3.75 mM	0.05335	-1.006 to 1.113	ns	0.9995
Kontrol Normal vs. Indometasin 7.5 mM	0.3296	-0.7300 to 1.389	ns	0.7298
Kontrol Normal vs. Indometasin 15 mM	-9.503	-10.56 to -8.443	****	<0.0001
Etanol 96% vs. Indometasin 3.75 mM	-0.7555	-1.815 to 0.3041	ns	0.1565
Etanol 96% vs. Indometasin 7.5 mM	-0.4793	-1.539 to 0.5803	ns	0.455
Etanol 96% vs. Indometasin 15 mM	-10.31	-11.37 to -9.252	****	<0.0001
Indometasin 3.75 mM vs. Indometasin 7.5 mM	0.2762	-0.7834 to 1.336	ns	0.8259
Indometasin 3.75 mM vs. Indometasin 15 mM	-9.556	-10.62 to -8.497	****	<0.0001
Indometasin 7.5 mM vs. Indometasin 15 mM	-9.833	-10.89 to -8.773	****	<0.0001

Tabel 4. Hasil Perbandingan Tukey Ekspresi gen *tom40*

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96%	0.7876	-0.3816 to 1.957	ns	0.1844
Kontrol Normal vs. Indometasin 3.75 mM	0.08035	-1.089 to 1.250	ns	0.9983
Kontrol Normal vs. Indometasin 7.5 mM	-0.0822	-1.251 to 1.087	ns	0.9981
Kontrol Normal vs. Indometasin 15 mM	-5.197	-6.366 to -4.028	****	<0.0001
Etanol 96% vs. Indometasin 3.75 mM	-0.7073	-1.876 to 0.4619	ns	0.2458
Etanol 96% vs. Indometasin 7.5 mM	-0.8698	-2.039 to 0.2994	ns	0.1376
Etanol 96% vs. Indometasin 15 mM	-5.985	-7.154 to -4.816	****	<0.0001
Indometasin 3.75 mM vs. Indometasin 7.5 mM	-0.1626	-1.332 to 1.007	ns	0.9761
Indometasin 3.75 mM vs. Indometasin 15 mM	-5.277	-6.447 to -4.108	****	<0.0001
Indometasin 7.5 mM vs. Indometasin 15 mM	-5.115	-6.284 to -3.946	****	<0.0001

Tabel 5. Hasil Perbandingan Tukey Ekspresi gen *sod1*

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96 %	0.6325	-0.3841 to 1.649	ns	0.2287
Kontrol Normal vs. Indometasin 3.75 mM	0.01585	-1.001 to 1.032	ns	>0.9999
Kontrol Normal vs. Indometasin 7.5 mM	-0.0178	-1.034 to 0.9989	ns	>0.9999
Kontrol Normal vs. Indometasin 15 mM	-4.453	-5.470 to -3.437	****	<0.0001
Etanol 96 % vs. Indometasin 3.75 mM	-0.6167	-1.633 to 0.4000	ns	0.2441
Etanol 96 % vs. Indometasin 7.5 mM	-0.6503	-1.667 to 0.3664	ns	0.2126
Etanol 96 % vs. Indometasin 15 mM	-5.086	-6.102 to -4.069	****	<0.0001
Indometasin 3.75 mM vs. Indometasin 7.5 mM	-0.0336	-1.050 to 0.9830	ns	>0.9999
Indometasin 3.75 mM vs. Indometasin 15 mM	-4.469	-5.486 to -3.453	****	<0.0001
Indometasin 7.5 mM vs. Indometasin 15 mM	-4.436	-5.452 to -3.419	****	<0.0001

Tabel 6. Hasil Perbandingan Tukey Ekspresi gen *sod2*

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96%	0.8837	-1.046 to 2.813	ns	0.4453
Kontrol Normal vs. Indometasin 3.75 mM	0.06695	-1.863 to 1.997	ns	0.9999
Kontrol Normal vs. Indometasin 7.5 mM	-0.0453	-1.975 to 1.884	ns	>0.9999
Kontrol Normal vs. Indometasin 15 mM	-6.556	-8.486 to -4.627	***	0.0002
Etanol 96% vs. Indometasin 3.75 mM	-0.8168	-2.746 to 1.113	ns	0.5071
Etanol 96% vs. Indometasin 7.5 mM	-0.929	-2.859 to 1.001	ns	0.4066
Etanol 96% vs. Indometasin 15 mM	-7.44	-9.370 to -5.510	***	0.0001
Indometasin 3.75 mM vs. Indometasin 7.5 mM	-0.1123	-2.042 to 1.817	ns	0.9991
Indometasin 3.75 mM vs. Indometasin 15 mM	-6.623	-8.553 to -4.694	***	0.0002
Indometasin 7.5 mM vs. Indometasin 15 mM	-6.511	-8.441 to -4.581	***	0.0002

Tabel 7. Hasil Perbandingan Tukey Ekspresi gen *cat*

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Summary	Adjusted P Value
Kontrol Normal vs. Etanol 96%	0.8738	-0.7987 to 2.546	ns	0.3453
Kontrol Normal vs. Indometasin 3.75 mM	0.055	-1.617 to 1.727	ns	>0.9999
Kontrol Normal vs. Indometasin 7.5 mM	-0.6364	-2.309 to 1.036	ns	0.5895
Kontrol Normal vs. Indometasin 15 mM	-4.384	-6.056 to -2.711	***	0.0007
Etanol 96% vs. Indometasin 3.75 mM	-0.8188	-2.491 to 0.8537	ns	0.3938
Etanol 96% vs. Indometasin 7.5 mM	-1.51	-3.183 to 0.1624	ns	0.0725
Etanol 96% vs. Indometasin 15 mM	-5.257	-6.930 to -3.585	***	0.0003
Indometasin 3.75 mM vs. Indometasin 7.5 mM	-0.6914	-2.364 to 0.9811	ns	0.5257
Indometasin 3.75 mM vs. Indometasin 15 mM	-4.439	-6.111 to -2.766	***	0.0007
Indometasin 7.5 mM vs. Indometasin 15 mM	-3.747	-5.420 to -2.075	**	0.0015