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DAFTAR PUSTAKA

Akollo, I. R., Satoto, T. B. T., dan Umniyati S.R. 2020. Status Resistensi Nyamuk *Aedes aegypti* terhadap Malathion dan Mutasi Gen *ace-1* di Kota Ambon. *Jurnal Vektor Penyakit*. 14(2): 119-128.

Aïzoun, N., Ossè, R., Azondekon, R., Alia, R., Oussou, O., Gnanguenon, V., Aikpon, R., Padonou, G. G., and Akogbéto, M. 2013. Comparison of the standard WHO susceptibility tests and the CDC bottle bioassay for the determination of insecticide susceptibility in malaria vectors and their correlation with biochemical and molecular biology assays in Benin, West Africa. *Parasites & Vectors*. 6: 147.

Ariati, J., Perwitasari, D., Marina, R., Shinta, S., Lasut, D., dan Nusa, R. 2018. Status kerentanan *Aedes aegypti* terhadap insektisida golongan organofosfat dan piretroid di Indonesia. *Jurnal Ekologi Kesehatan*. 17(3): 135-145.

Asgarian, T. S., Vatandoost, H., Hanafi-Bojd, A. A., and Nikpoor, F. 2023. Worldwide status of insecticide resistance of *Aedes aegypti* and Ae. albopictus, vectors of arboviruses of chikungunya, dengue, zika and yellow fever. *Journal of ArthropodBorne Diseases*. 17: 1–27.

Askrening, A., Supriyatno, A., Yunus, R., and Supiati, S. 2021. Factors related to the presence of mosquito eggs trapped in ovitraps DHF-endemic areas in Kendari City, Indonesia. *Public Health of Indonesia*. 7(4): 151–160.

Atencia-Pineda, M. C., García-Leal, J., Diaz-Ortiz, D., Pareja-Loaiza, P., Pacheco-Lugo, L., Hoyos-López, R., Calderón-Rangel, A., Fragozo-Castilla, P., GutiérrezRodríguez, S. M., Flores, A. E., Maestre-Serrano, R. 2025. Susceptibility to organophosphate insecticides in *Aedes aegypti* (Diptera: Culicidae) from northern Colombia and associated resistance mechanisms. *Parasites & Vectors*. s18(7) : 1-11.

Badr, A. M. 2020. Organophosphate toxicity: updates of malathion potential toxic effects in mammals and potential treatments. *Environmental Science and Pollution Research*. 27(21): 26036–26057.

UNIVERSITAS GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Balaska, S., Fotakis, E. A., Kioulos, I., Grigoraki, L., Mpellou, S., Chaskopoulou, A., and Vontas, J. 2020. Bioassay and molecular monitoring of insecticide resistance status in *Aedes albopictus* populations from Greece, to support evidence-based vector control. *Parasites & Vectors*. 13: 328.

Bhatt, S., Gething, P. W., Brady, O. J., Messina, J. P., Farlow, A. W., Moyes, C. L., Drake, J. M., Brownstein, J. S., Hoen, A. G., Sankoh, O., Myers, M. F., George, D. B., Jaenisch, T., Wint, G. R. W., Simmons, C. P., Scott, T. W., Farrar, J. J., and Hay, S. I. 2013. The global distribution and burden of dengue. *Nature*. 496(7446): 504–507.

Borror, D., J., C., A., Tripehom, N., F., dan Johnson. 1992. *Pelajaran Pengenalan Serangga*. Yogyakarta (ID) : Universitas Gadjah Mada.

Buratti, F. M., D'Aniello, A., Volpe, M. T., Meneguz, A., and Testai, E. 2005. Malathion bioactivation in the human liver: the contribution of different cytochrome p450 isoforms. *Drug Metab Dispos*. 33(3): 295–302.

Centers for Disease Control and Prevention. 2010. *Guidelines for evaluating insecticide resistance in vectors using the CDC bottle bioassay*. Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention (CDC). 2025. *Global manual for evaluating insecticide resistance using the CDC bottle bioassay* (Updated edition). Atlanta, GA: U.S. Department of Health and Human Services.

Chadee, D., D. 2013. Resting behaviour of *Aedes aegypti* in Trinidad: with evidence for the re-introduction of indoor residual spraying (IRS) for dengue control. *Parasit Vectors*. 6:255.

Chng, J. W. Q., Parvathi, T., and Pang, J. 2022. Knowledge, attitudes and practices of dengue prevention between dengue sustained hotspots and non-sustained hotspots in Singapore: A cross-sectional study. *Scientific Reports.* 12: 18426

Christophers, S.R. 1960. *Aedes aegypti (L.) The Yellow Fever Mosquito*. Its Life History, Bionomics and Structure. Cambridge University Press, Cambridge.

UNIVERSITAS GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Derilus, D., Impoinvil L. M., Muturi, E., J., McAllister, J., Kenney, J., Massey, S. E., Hemme, R., Kothera, L., and Lenhart, A. 2023. Comparative transcriptomic analysis of insecticide-resistant *Aedes aegypti* from Puerto Rico reveals insecticide-specific patterns of gene expression. Genes. 14(8): 1626.

Desjardins, P., and Conklin, D. 2010. NanoDrop microvolume quantitation of nucleic acids. *Journal of Visualized Experiments*. (45): e2565.

Dinindra, A. M., Nuryady, M. M., Sustyarini, R. E., Permana, T. I., Hudha, A. M., Permana, F. H., Mu'azah, Z. A., Agustin, J. U., Sasmitasari, N. I. D., dan Setiawan, M. A. L. 2023. Uji *susceptibility Aedes aegypti* terhadap malathion 0,8% di Kabupaten Jombang, Jawa Timur. *Metamorfosa: Journal of Biological Sciences*. 10(1): 267–275.

Fagbohun, Kayode I., Idowu, Taiwo E., Otubanjo, Adetoro O., Awolola, and Sam T. 2020. Susceptibility status of mosquitoes (Diptera : Culicidae) to Malathion in Lagos, Nigeria. *Animal Research International*. 17(1): 3541 – 3549.

Falah, A. A., Astuti, R. R. U. N. W., and Setiawan, Y. D. 2024. Analysis Resistance of Malathion and Cypermethrin Insecticide on *Aedes aegypti* (Linnaeus, 1762) from Kaliwungu Kudus and Kotagede Yogyakarta Using CDC bottle bioassay. *BIO Web of Conferences*. 94 : 02001.

FEHD. 2020. *Dengue fever and vector surveillance*. Diakses 2 November 2025, dari : https://www.fehd.gov.hk/english/pestcontrol/dengue_fever/index.html

Fernandes, T. J., Amaral, J. S., and Mafra, I. 2020. DNA barcode markers applied to seafood authentication: An updated review. *Crit Rev Food Sci Nutr*. 61: 3904–3935.

Ferrara, G. B., Murgia, B., Parodi, A. M., Valisano, L., Cerrano, C., Palmisano, G., Bavestrello, G., and Sara, M. 2006. The assessment of DNA from marine organisms via a modified salting-out protocol. *Cellular & Molecular Biology Letters*. 11: 155–160.

UNIVERSITAS GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

GBIF Secretariat. 2023. *Aedes aegypti* (Linnaeus, 1762). GBIF Backbone Taxonomy. Diakses 10 Juni 2025, dari https://www.gbif.org/species/11188900

Harbach, R. 2007. The Culicidae (Diptera): a review of taxonomy, classification and phylogeny. *Zootaxa*. 1668: 591–638.

Hasmiwati, Rusjdi, S. R., and Nofita, E. K. A. 2018. Detection of *ace-1* gene with insecticides resistance in *Aedes aegypti* populations from DHF-endemic areas in Padanin Padang, Indonesia. *Biodiversitas*. 19(1): 31–6.

Hendri, J., Kusnandar, A. J., dan Astuti, E. P. 2016. Identifikasi Jenis Bahan Aktif dan Penggunaan Insektisida Antinyamuk serta Kerentanan Vektor DBD terhadap Organofosfat pada Tiga Kota Endemis DBD di Provinsi Banten. *ASPIRATOR*. 8(2) : 77-86.

Hidajat, M. C., Sayono, Ristiyanto, Garjito, T. A., Lasmiati, Siswoko, S. P., Ayuningtyas, R. T. D., Yanti, A. O., Anggraeni, Y. M., Trapsilowati, W., and Hadisaputro, S. 2022. Comparison of the WHO standard and the CDC bottle bioassay testing methods for assessing the dengue vectors' susceptibility to insecticides in Semarang, Indonesia. *Southeast Asian J Trop Medpublic Health.* 53(2): 292–293.

Huang, Y. M. 2004. The subgenus Stegomyia of *Aedes* in the Afrotropical Region with keys to the species (Diptera: Culicidae). *Zootaxa*. 700(1): 1-20.

Imam, H., Nigar, Z., and Sofi, G. 2014. The basic rules and methods of mosquito rearing (*Aedes aegypti*). *Journal of Natural Science, Biology and Medicine*. 5(1): 125– 128.

Innovative Vector Vontrol Consortium (IVCC). 2024. *Insecticide Resistance Management* (IRM). Diakses 10 Juni 2025, dari https://www.ivcc.com/approach/vector-control/

Isfanda, I., dan Riezky, A. K. 2019. Status Kerentanan *Aedes Aegypti* (Linn.) terhadap Insektisida dan Kaitannya dengan Kejadian Kasus Demam Berdarah di Kota Banda Aceh. *Sel J Peneliti Kesehatan*. 6(1): 35–46.

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Jackson, C. J., Liu, J.-W., Carr, P. D., Younus, F., Coppin, C., Meirelles, T., Lethier, M., Pandey, G., Ollis, D. L., Russell, R. J., Weik, M., and Oakeshott, J. G. 2013. Structure and function of an insect α-carboxylesterase (αEsterase7) associated with insecticide resistance. *Proceedings of the National Academy of Sciences*. 110(25): 10177–10182.

Kementerian Kesehatan Republik Indonesia. 2013. *Pedoman survei entomologi demam berdarah dengue dan kunci identifikasi nyamuk Aedes*. Jakarta: Direktorat Jenderal PP dan PL, Direktorat Pengendalian Penyakit Bersumber Binatang, Subdirektorat Pengendalian Vektor.

Kementerian Kesehatan Republik Indonesia. 2018. *Panduan monitoring resistensi vektor terhadap insektisida*. Jakarta (ID). Direktorat Jenderal Pencegahan dan Pengendalian Penyakit, 1–54.

Kementerian Kesehatan Republik Indonesia, Direktorat Jenderal Pencegahan dan Pengendalian Penyakit. 2024. *Profil Kesehatan Indonesia 2023*. Kementerian Kesehatan Republik Indonesia.

Kirche, A. A., Kurniawan, B., Putri, G. T., dan Mutiara, H. 2025. Tinjauan pustaka: Uji resistensi insektisida malathion terhadap nyamuk *Aedes aegypti* menggunakan metode *CDC bottle bioassay*. *Medula*. 15(1): 106–115.

Krstic´, Olovic, M. C., Kralj, M. B., Mladenfranko, Krinulovic, K., Trebs, P., and Vasic, V. 2008. Inhibition of AChE by malathion and some structurally similarcompounds. *Journal of Enzyme Inhibition and Medicinal Chemistry*. 23(4): 562–573.

Kushartanti, R., Fitriana, N. G. 2025. Integrating self-awareness surveys and ovitrap monitoring to enhance dengue vector control: A community-based experimental study in Bulusan Village, Semarang City. *Community Research of Epidemiology (CORE)*. 5(2): 91–100.

Lahondère, C., Vinauger, C., Okubo, R. P., Wolffa, G. H., Chan, J. K., Akbari, O. S., Riffell, J. A. 2020. The olfactory basis of orchid pollination by mosquitoes. *PNAS*. 117(1) : 708–716.

UNIVERSITAS GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Lee, S. B., & Shewale, J. G. (2017). DNA extraction methods in forensic analysis. Dalam *Encyclopedia of Analytical Chemistry*. John Wiley & Sons. https://doi.org/10.1002/9780470027318.a1104m.pub2.

Lesmana, S. D., Maryanti, E., Susanty, E., Afandi, D., Harmas, W., Octaviani, D. N., Zulkarnain, I., Pratama, M. A. B., and Mislindawati, M. 2022 Organophosphate resistance in *Aedes aegypti*: Study from dengue hemorrhagic fever endemic subdistrict in Riau, Indonesia. *Reports of Biochemistry & Molecular Biology*. 10(4): 590 - 596.

Liebman, K. A., Pinto, J., Valle, D., Palomeque, D. M., Strode, C., and Lenhart, A. (2015). Novel mutations in the voltage-gated sodium channel gene of *Aedes aegypti* associated with resistance to pyrethroid insecticides in Latin America. *PLoS Neglected Tropical Diseases*. 9(10): e0003726.

Lutz, I., Miranda, J., Santana, P., Martins, T., Ferreira, C., Sampaio, I., Vallinoto, M., and Gomes, G. E. (2023). Quality analysis of genomic DNA and authentication of fisheries products based on distinct methods of DNA extraction. *PLOS ONE*: 18(2): e0282369.

Maftukhah, R. Z., Sasongkowati, R., Istanto, W., dan Anggraini, A. D. 2022. Deteksi gen penyandi resistensi insektisida karbamat (*Ace 1*) pada nyamuk *Aedes aegypti* metode PCR. *Malahayati Nursing Journal*. 4(10) : 2573-2583.

Majid, A., Mbuik, H. B., Nikmah, and Setiawan, M. A. 2025. Analysis of knowledge and behavior of dengue fever prevention in Kupang City community, Indonesia. *Journal of Cultural Analysis and Social Change.* 10(2): 3408–3415.

Manik, J. R., Luma, D., Kutani, L. F., Kailola, J., dan Boleu, F. I. 2020. Karakteristik Habitat Perkembangbiakan *Aedes aegypti* di Desa Gosoma, Halmahera Utara, Indonesia. *BIOSFER, J.Bio. & Pend.Bio*. 5 (1) : 31-36.

Mateescu, I., and Lequime, S. 2024. Dengue-mediated changes in the vectorial capacity of *Aedes aegypti* (Diptera: Culicidae): manipulation of transmission or infection by-product. *Journal of Medical Entomology*. 62(1): 19-28.

UNIVERSITAS GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Mattingly. 1967. *Taxonomy of Aedes aegypti and Related Species*. Bull. Org. mond. Sante. 36, 552-554.

Mazlan, A. H., Muhamad Najib, M. H. A., Hassan, M. H., Mohd Hatta, F. H., and Yusoff, R. M. 2024. Effect of DNA template concentration on standard polymerase chain reaction. *International Journal of Pharmaceuticals, Nutraceuticals and Cosmetic Science*. 7(1): 1–11.

Mohamed, R. A. E. H., Khan, Y., Alzahrani, K. J., Alzahrani, F. M., Alsharif, K. F., Khan, A., Noor, F., Qadeer, A., Lin, G.-B., and Chen, C.-C. 2025. Knowledge, attitudes, and practices regarding dengue and its vectors among medical professionals: A cross-sectional study. *Frontiers in Cellular and Infection Microbiology.* 15: 1-12.

Mullen, G. R., Durden, L. A. 2019. *Medical and veterinary entomology (3rd ed.)*. Academic Press. ISBN 978-0-12-814043-7.

Mulyani, L., Setiyono, A., dan Faturahman, Y. 2022. Hubungan faktor lingkungan fisik rumah, volume kontainer dan faktor perilaku pemberantasan sarang nyamuk dengan keberadaan jentik nyamuk *Aedes* sp. *Jurnal Kesehatan Komunitas Indonesia*. 18(2): 448 – 466.

Mulyaningsih, B., Umniyati, S. R., Satoto, T. B. T., Diptyanusa, A., Nugrahaningsih D. A. A., and Selian, Y. 2018. Insecticide resistance and posible mechanisms of *Aedes aegypti* (Diptera: Culicidae) in Yogyakarta. *J Med Sci*. 50(1): 24-32.

Muthusamy, R., and Shivakumar, M. S. 2015. Susceptibility status of *Aedes aegypti* (L.) (Diptera: Culicidae) to temephos from three districts of Tamil Nadu, India. *J Vector BorneDis*. 52(2) : 159–65.

Nazar, Y. E., Hasmiwati, and Rahayu, R. 2025. Acetylcholinesterase activity and *Ace-1* mutation in *Aedes aegypti* resistance to temephos. *Biodiversitas Journal of Biological Diversity*. 26(9): 4598–4605.

Nelson, M. J. 1986. *Aedes aegypti*: *Biology and Ecology, Pan American Health Organization*, Washington, DC, PNSP/86-63, pp. 50.

UNIVERSITAS GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ng, K. H., Zuharah, W. F. 2022. Current resistance status of *Aedes aegypti* and *Aedes albopictus* populations in Penang Island, Malaysia. *Tropical Biomedicine*. 39(1): 38–59.

Nihad, P. P. M., Subramanian, M., Gunasekaran, K., and Kumar, A. 2023. Response to insecticides and underlying mechanisms of resistance in the field populations of *Aedes aegypti* Linnaeus (Diptera: Culicidae) in Puducherry, India. *Journal of Vector Borne Diseases*. 60(4), 393–400.

Novita, I. B., Martini, M., Hestiningsih, R., Yuliawati, S., Kusariana, N., and Hadi, M. 2019. *Aedes aegypti* vector resistance status on malathion and activity of non specific esteration enzymes in Tembalang district, Semarang city. *Jurnal Kedokteran dan Kesehatan Indonesia*. 10(3): 215-224.

Nuryady, M. M., Tamala, S., Ariesaka, K. M., Ekawasti, F., and Kwon, O. 2025. Specific primer design for acetylcholinesterase-1 (*ace-1*) as a putative insecticide resistance gene for *Aedes aegypti*. *Acta Veterinaria Indonesiana*. 13(3): 183–190.

OECD. 2018. *Safety assessment of transgenic organisms in the environment, Volume 8: OECD consensus document of the biology of mosquito Aedes aegypti*. OECD Publishing. https://doi.org/10.1787/9789264302235-en

Ortega-Lo´pez, L. D., Betancourth, M. P., Leo´n, R., Kohl, A., and Ferguson, H. M. 2024. Behaviour and distribution of *Aedes aegypti* mosquitoes and their relation to dengue incidence in two transmission hotspots in coastal Ecuador. *PLoS Negl Trop Dis*. 18(4): e0010932.

Paupy, C., Ollomo, B., Kamgang, B., Moutailler, S., Rousset, D., Demanou, M., Hervé, J. P., Leroy, E., and Simard, F. 2010. Comparative role of *Aedes albopictus* and *Aedes aegypti* in the emergence of dengue and chikungunya in Central Africa. *Vector - Borne Zoonotic Dis*. 10 (3) : 256-266.

Pinto, J., Palomino, M., Mendoza-Uribe, L., Sinti, C., Liebman KA., and Lenhart, A. 2019. Susceptibility to Insecticides and Resistance Mechanisms in Three Populations of *Aedes aegypti* from Peru. *Parasites and Vectors*. 12: 494.

UNIVERSITAS GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Poulton, B. C., Colman, F., Anthousi, A., Sattelle, D. B., and Lycett, G. J. 2024. *Aedes aegypti* CCEae3A carboxylase expression confers carbamate, organophosphate and limited pyrethroid resistance in a model transgenic mosquito. *PLOS Neglected Tropical Diseases.* 18(2): e0011595.

Pratiwi, N., Hasmiwati, dan Hendriati. 2020. Status resistensi nyamuk Aedes aegypti dari Wilayah Kerja Puskesmas Salido terhadap malathion 5% dan alfa-sipermethrin 0,025%. *Jurnal Ilmu Kesehatan Indonesia*. 1(3): 329–335.

Rahayu, R., Melta, D., and Hasmiwati. 2022. Detection of *Ace-1* mutation in temephos-resistant *Aedes aegypti* L. in West Sumatra, Indonesia. *Pakistan Journal of Biological Sciences*. 25(9): 816–821.

Ratnasari, A., Jabal, A. R., Rahma, N., Rahmi, A.N., Karmila, M., and Wahid, I. 2020. The ecology of *Aedes aegypti* and *Aedes albopictus* larvae habitat in coastal areas of South Sulawesi, Indonesia. *Biodiversitas*. 21(10): 4648-4654.

Rasli, R., Cheong, Y. L., Che Ibrahim, M. K., Farahininajua Fikri, S. F., Norzali, R. N., Nazarudin, N. A., Hamdan, N. F., Muhamed, K. A., Hafisool, A. A., Azmi, R. A., Ismail, H. A., Ali, R., Ab Hamid, N., Taib, M. Z., Omar, T., Ahmad, N. W., and Lee, H. L. 2021. Insecticide resistance in dengue vectors from hotspots in Selangor, Malaysia. *PLoS Neglected Tropical Diseases*. 15(3): e0009205.

Romadhan, A, Wulandari, P. S., Enis, R. N., Aurora, W. I. D., and Ayudia, E. I. 2024. Relationship between knowledge level and community attitude in dengue fever prevention behavior. *Jambi Medical Journal (JOMS)*. 4(3): 138-145.

Rueda, L. M. 2004. *Pictorial keys for the identification of mosquitoes (Diptera: Culicidae) associated with dengue virus transmission* (Zootaxa 589). Magnolia Press.

Sabira, Z., Jabal, A. R., Ratnasari, A., Toemon, A. I., dan Hanasia. 2024. Identifikasi larva *Aedes aegypti* dan *Aedes albopictus* di Kecamatan Pahandut Kota Palangka Raya. *Tropis: Jurnal Riset Teknologi Laboratorium Medis*. 1(1): 23-28.

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Samal, R. R., Panmei, K., Lanbiliu, P., and Sarita, K. 2022. Metabolic detoxification and ace1 target site mutations associated with acetamiprid resistance in *Aedes aegypti* L. *Front Physiol*. 30(13) : 988907.

Satoto, T. B. T, Alvira, N., Wibawa, T., and Diptyanusa, A. 2017. Controlling Factors that Potentially against Transmission of Dengue Hemorrhagic Fever at State Elementary Schools in Yogyakarta. *Kesmas: National Public Health Journal*. 11 (4): 178-184.

Schopfer, L. M., Tacal, O., Masson, P., and Lockridge, O. 2025. Kinetic analysis suggests that malathion at low environmental exposures is not toxic to humans. *PLOS ONE*. 20(10): 1-16.

Seid, M., Aklilu, E., and Animut, A. 2024. Spatio-temporal occurrence and habitat characteristics of *Aedes aegypti* (Diptera: Culicidae) larvae in Southern Afar region, Ethiopia. *Tropical Medicine and Health*. 52: 51.

Silalahi, C. N., Tu, W. C., Chang, N. T., Singham, G. V., Ahmad, I., and Neoh, K. B. 2022. Insecticide resistance profiles and synergism of field *Aedes aegypti* from Indonesia. *PLoS Neglected Tropical Diseases*. 16:1–13.

Sharma, V., and Mandavdhare, H. 2016. Differentiating primary and secondary dengue infections: *Why and how? Medical Journal of Dr DY Patil University*. 9(5) : 594–595.

Sobhy, I., and Berry, C. 2024. Chemical ecology of nectar–mosquito interactions: recent advances and future directions. *Current Opinion in Insect Science*, 63(101199) : 2214–5745.

Sofiana, D, dan Wuliandari J.R. 2023. Survei Nyamuk *Aedes aegypti* menggunakan Ovitrap di Kelurahan Mersi dan Desa Ledug. *Sainteks*. 1(20) : 49-59.

Sofiana, L., Rokhmayanti, R., Martini, M., and Wulandari, D. A. 2023. Insecticide resistance of *Aedes aegypti* in Indonesia: A systematic review. *International Journal of Public Health Science*. 12: 950–964.

UNIVERSITAS
GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Spadar, A., Collins, E., Messenger, L. A., Clark, T. G., and Campino, S. 2024. Uncovering the genetic diversity in *Aedes aegypti* insecticide resistance genes through global comparative genomics. *Scientifc Reports*. 14:13447.

Sudiharto, M., Udiyono, A., dan Kusariana, N. 2020. Status Resistensi *Aedes aegypti* terhadap Malathion 0,8% dan Sipermetrin 0,05% di Pelabuha Pulau Baai Kota Bengkulu. *Jurnal Kesehatan Masyarakat*. 8(2) : 243-249.

Sulasmi, S., Ahmad, H., Juherah, J., Suryadi, I., and Rachmawati, S. 2025. Susceptibility of *Aedes aegypti* to malathion and permethrin insecticides in Enrekang Regency: An experimental study. *International Journal of Advances in Applied Sciences (IJAAS).* 14(2): 291–299.

Supriyono, S., Hermansyah, H., Suryaningsih, S. E., and Pujiyati, E. 2023. Morphological characteristic of dengue vectors *Aedes aegypti* and *Ae. albopictus* (Family: Culicidae) using advanced light and scanning electron microscope. *Biodiversitas*. 24(2): 894–900.

Susanti, S., dan Suharyo, S. 2017. Hubungan Lingkungan Fisik Dengan Keberadaan Larva Aedes Pada Area Bervegetasi Pohon Pisang. *Unnes Journal of Public Health*. 6(4): 271–276.

Susanty, E., Lesmana, S. D., dan Taufik, R. 2020. Status Resistensi *Aedes aegypti* terhadap Malathion 0,8% di Kelurahan Labuh Baru Timur Kecamatan Payung Sekaki Kota Pekanbaru. *Jurnal Medika Udayana*. 11(3): 2597-8012.

Susanty, E., Lesmana, S. D., Mislindawati, Aulia, A. F., Zuqni, A., dan Atsila, M. N. 2024. Uji Kerentanan *Aedes aegypti* terhadap Malathion, Permetrin, dan Bendiokarb di Kelurahan Tangkerang Timur Kecamatan Tenayan Raya, Pekanbaru. *Jurnal Ilmu Kedokteran (Journal of Medical Science)*. 18(1) : 25-30.

Sutanti, Y. S., Handoko, Y., Swity, A. F., and Laelaem, S. E. 2023. Description of community knowledge, attitudes and behavior regarding Dengue Hemorrhagic Fever in Namasina Village, Central Maluku Regency. *JMedScientiae. 2*(3): 290–294

UNIVERSITAS
GADJAH MADA
STATUS RESISTENSI TERHADAP MALATHION DAN MUTASI GEN ACE-1 NYAMUK Aedes aegypti (LINNAEUS, 1762) DARI KOTA SORONG, PAPUA BARAT DAYA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Suwito *et al.* 2018. *Panduan Monitoring Resistensi Vektor terhadap Insektisida*. (Ditjen P2P Kemenkes).

Tang, J., and Randy, L. R. C. J. 2005. *Metabolism of Organophosphorus and Carbamates Pesticide*. In: Toxicology of Organophosphate & Carbamate Compounds.

Tasane, I. 2015. Uji Resisten Insektisida Malathion 0,8% terhadap Nyamuk A*edes aegypti* di Wilayah Fogging Kantor Kesehatan Pelabuhan Kelas II Ambon. *Jurnal Kesehatan Masyarakat*. 3(3) : 162-174.

Wei, Y., Zheng, X., He, S., Xin, X., Zhang, J., Hu, K., Zhou, G., and Zhong, D. 2021. Insecticide susceptibility status and knockdown resistance (kdr) mutation in *Aedes albopictus* in China. *Parasites & Vectors*. 14: 609.

Wila, R. W., Satoto, T. B. T., dan Mujiyanto. 2020. Distribusi Kasus Demam Berdarah Dengue dan Habitat Perkembangbiakan Nyamuk *Aedes aegypti* serta Indeks Pupa pada Daerah Endemis dan Non Endemis di Kabupaten Sumba Timur, Nusa Tenggara Timur. *Buletin Penelitian Kesehatan*. 48(3): 147 – 156.

World Health Organization. 2009. *Guidelines for efficacy testing of spatial repellents*. WHO Press.

World Health Organization. 2011. *Regional Office for South-East Asia*. Comprehensive guideline for prevention and control of dengue and dengue haemorrhagic fever: Revised and expanded edition. WHO Regional Office for South-East Asia.

World Health Organization (WHO). 2016. *Monitoring and Managing Insecticide Resistance in Aedes mosquito Populations*. Who.16 (10665):7.

World Health Organization. 2016. *Test procedures for insecticide resistance monitoring in malaria vector mosquitoes* (2nd ed.). Geneva: World Health Organization.

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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

World Health Organization. 2022. Standard operating procedure for impregnation of filter papers for testing insecticide susceptibility of adult mosquitoes in WHO tube tests (SOP version: Paper-Impreg/01/14 January 2022).

Zhao, S. Y., Liu, H. K., Xie, Z. S., Wu, Y. M., Wu, P. L., Liu, T., Yang, W. Q., Wu, J., Fu, J. Y., Wang, C. M., James, A. A., and Chen, X. 2024. Vision guides the twilight search for oviposition sites of the Asian tiger mosquito, *Aedes albopictus*. *PLoS Neglected Tropical Diseases*. 18(11): e0012674.

Zulfa, R., Lo, W.C., Cheng, P.C., Martini, M., and Chuang, T. W. 2022. Updating the insecticide resistance status of *Aedes aegypti* and *Aedes albopictus* in Asia: A systematic review and meta-analysis. *Tropical Medicine and Infectious Disease*. 7: 306.