



DAFTAR PUSTAKA

- Abdullah, R.R., 2019. Insecticidal activity of secondary metabolites of locally isolated fungal strains against some cotton insect pests. *Journal of Plant Protection and Pathology*, 10(12), pp.647-653.
- Ahmad, M., A. Ghaffar, M. Rafiq. 2013. Host plants of leaf worm, *Spodoptera litura* (Fabricius) (lepidoptera: Noctuidae) in Pakistan. *Asian Journal of Agriculture and Biology* 1(1):23-28.
- Ali, A.M., Mohamed, D.S., Shaurub, E.H. and Elsayed, A.M., 2017. Antifeedant activity and some biochemical effects of garlic and lemon essential oils on *Spodoptera littoralis* (Boisduval)(Lepidoptera: Noctuidae). *Journal of Entomology and Zoology Studies*, 5(3), pp.1476-1482.
- Al-Rubaye, A. F., I. H. Hameed, dan Moh. J. Kadhim. 2017. A Review: Uses of Gas Chromatography-Mass Spectrometry (GCMS) Technique for Analysis of Bioactive Natural Compounds of Some Plants. *International Journal of Toxicological and Pharmacological Research.*, 9(1): 81-85.
- Anna, L. G. 2019. Uji Efektifitas Insektisida Nabati Daun KIrinyuh (*Chromolaena odorata*) terhadap Mortalitas Hama Ulat Grayak (*Spodoptera litura* F.) pada Pakan Daun Sawi [Skripsi]. Program Studi Pendidikan Biologi Universitas Sanata Dharma. Yogyakarta.
- Arivoli S, Tennyson S (2013) Screening of plant extracts for oviposition activity against *Spodoptera litura* (Fab). (Lepidoptera: Noctuidae). *Int J Fauna Biol Stud.* 1:20–24.
- Bal N, Chaubey S, Tiwari RC, Kour GD, Dhyani S. 2016. Varun (*Crataeva nurvala* Buch-Ham): a critical review with respect to urinary tract disorder. *Int J Ayurveda Pharma.* 4:49–51.
- Balfas, R., dan M. Willis. 2009. Pengaruh Ekstrak Tanaman Obat Terhadap Mortalitas dan Kelangsungan Hidup *Spodoptera Litura* F. (Lepidoptera: Noctuidae). *Balai Penelitian Tanaman Obat dan Aromatik.* 20 (2): 148-156.
- Bhattacharjee A, Sashidhara SC, Aswathanarayana. 2012. Phytochemical and ethno-pharmacological profile of *C. nurvala* Buch-Hum (Varuna): a review. *Asian Pac J Trop Biomed.* 2:S1162–68.13-4.
- Bopana N, & Saxena S. 2008. *Crataeva nurvala*: a valuable medicinal plant. *J Herbs Spices Med Plants.* 14(1-2):107–127.



Bora D, Khanikor B and Gogoi H (2012) Plant Based Pesticides: Green Environment with Special Reference to Silk Worms. Pesticides - Advances in Chemical and Botanical Pesticides. InTech. Tersedia: <http://dx.doi.org/10.5772/47832>.

Cahyadi, A.T. 2004. Biologi *Sycanus annulicornis* (Hemiptera : Reduviidae) pada Tiga Jenis Mangsa. [Skripsi]. Dapartemen Hama dan Penyakit Tumbuhan. Institut Pertanian Bogor. Bogor.

Calumpang, S. M. F. 2013. Behavioral Response of *Spodoptera litura* (F) (Lepidoptera : Noctuidae) to Selected Herbs and Eggplant. *J. Issaas* 19 (2) : 95 – 103.

Casuga FP, Castillo AL and Corpuz MJT. 2016. GC–MS Analysis of Bioactive Compounds Present in Different Extracts of an Endemic Plant. *Asian Pacific Journal of Tropical Biomedicine* 6(11): 957–961.

Casuga FP, Castillo AL and Corpuz MJT. 2016. GC–MS Analysis of Bioactive Compounds Present in Different Extracts of an Endemic Plant. *Asian Pacific Journal of Tropical Biomedicine* 6(11): 957–961.

Darmapatni, K. A. G., A. Basori, dan N. M. Suaniti. 2016. Pengembangan Metode GCMS Untuk Penetapan Kadar Acetaminophen Pada Spesimen Rambut Manusia. *Jurnal Biosains Pascasarjana*. 3(18): 62-69.

Departemen Kesehatan RI, 2000, Parameter Standar Umum Ekstrak Tumbuhan Obat, Cetakan Pertama, 3-11, 17-19, Dikjen POM, Direktorat Pengawasan Obat Tradisional

Distani, 2021. Pestisida Nabati <http://distani.tulangbawangkab.go.id/news/read/3576/pestisida-nabati>. Diakses tanggal 11 Desember 2022 pukul 23:39

Ditlintan-ATA. 1989. Organisme pengganggu tanaman kedelai dan strategi pengendaliannya. Lokakarya Pengamatan dan Peramalan Organisme Pengganggu Tanaman Tingkat Nasional. Direktorat Perlindungan Tanaman ATA 162. 49.

Doble M., Prabhakar K.P., 2008. A Target Based Therapeutic Approach Towards Diabetes Mellitus, *Journal Medicinal Plants*. 4, 291-308

Durán-Peña MJ, Botubol Ares JM, Hanson JR, Collado IG, Hernández-Galán R. 2015. Biological activity of natural sesquiterpenoids containing a Gemdimethylcyclopropane unit. *Natural Product Reports*. 32(8):1236–1248

Durán-Peña MJ, Botubol Ares JM, Hanson JR, Collado IG, Hernández-Galán R. 2015. Biological activity of natural sesquiterpenoids containing a Gemdimethylcyclopropane unit. *Natural Product Reports* 32(8):1236–1248



- Ebadollahi, A. and Taghinezhad, E., 2020. Modeling and optimization of the insecticidal effects of *Teucrium polium* L. essential oil against red flour beetle (*Tribolium castaneum* Herbst) using response surface methodology. *Information Processing in Agriculture*, 7(2), pp.286-293.
- Ergina, S. Nuryanti, & I. D. Pursitasari. 2014. Uji Kualitatif Senyawa Metabolit Sekunder pada Daun Palado (*Agave angustifolia*) yang Diekstraksi dengan Pelarut Air dan Etanol." *Jurnal Akademika Kimia*, 3(3):165-172.
- Facknath S, and Kawol D. 1996. Antifeedant and insecticidal effects of some plant extracts on *Crocidolomia binotatalis*. *Journal of Insect Science and its Application*. (5)6:571-74.
- Fand, B. B., N. T. Sul, S. K. Bal, P. S. Minhas. 2015. Temperature impacts the development and survival of common cutworm (*Spodoptera litura*): Simulation and visualization of potential population growth in India under warmer temperatures through life cycle modelling and spatial mapping. *Plos one* 10(4):1-25.
- FAO dan CABI (Food and Agriculture Organization). 2019. Community-Based Fall Armyworm (*Spodoptera frugiperda*) Monitoring, Early Warning and Management. Training of Trainers Manual, First Edition. Hal 112.
- Farnsworth NR, Akerele O, Bingel AS. 1985. Medicinal plants in therapy. *Bull World Health Organ.* 63:965–981.
- Firdausi, A., Siswoyo, T. A., & Wiryadiputra, S. 2013. Identifikasi tanaman potensial penghasil tanin-protein kompleks untuk penghambatan aktivitas α -amylase kaitannya sebagai pestisida nabati. *Pelita Perkebunan*, 29(1), 31–43.
- Firmansyah E, & Pusparani S. 2019. The potential leaf extract of *Sphagneticola trilobata* as botanical insecticide to control *Spodoptera litura* larvae. *Musamus. J. Agrotech. Research (MJAR)*, 2(1): 13–19.
- Firmansyah, A. P., S. Arwati, D. Sartika. 2021. The Examination of Effects of Babadotan (*Ageratum Conyzoides* L.) Extract as Digestive Poison on Armyworm (*Spodoptera Litura* F.). 2021. *J. Agroplantae*. 10(2):131-137.
- Gomathy, S. and Rathinan, K., 2017. Identification of insecticidal compounds in *Terminalia arjuna* bark extract using gas chromatography and mass spectroscopic technique. *Internl. J. Ent. Res*, 2(6), pp.108-112.
- Gophane, S. R. & C. N. Khobragade. 2019. Chemical Profiling, Adme Prediction of *Boerhavia diffusa* Linn. and *Crataeva nurvala* Buch. Ham in The Management of Urolithiasis. *IJPSPR*. 10(2): 890-916.



Gu, L., Zhang, G.F., Kombu, R.S., Allen, F., Kutz, G., Brewer, W.U., Roe, C.R. and Brunengraber, H., 2010. Parenteral and enteral metabolism of anaplerotic triheptanoin in normal rats. II. Effects on lipolysis, glucose production, and liver acyl-CoA profile. *American Journal of Physiology-Endocrinology and Metabolism*, 298(2), pp.E362-E371.

Gumgumjee NM, Hajar AS. 2015. Antibacterial activities and GC-MS analysis of phytocomponents of *Ehretia abyssinica* R. Br. ex Fresen. *International Journal of Applied Biology and Pharmaceutical technology*. 6(2):236–241.

Gumgumjee NM, Hajar AS. 2015. Antibacterial activities and GC-MS analysis of phytocomponents of *Ehretia abyssinica* R. Br. ex Fresen. *International Journal of Applied Biology and Pharmaceutical technology*. 6(2):236–241.

Harborne, J. B. 1987. *Metode Fitokimia : Penuntun Cara Modern Menganalisis Tumbuhan*, terbitan ke-2, diterjemahkan oleh Kosasih padmawinata dan Iwang Soediro. Penerbit ITB. Bandung.

Hartono, H. S. O., H. Soetjipto, A. I. Kristijanto. 2017. Extraction and Chemical Compounds Identification of Red Rice Bran Oil Using Gas Chromatography – Mass Spectrometry (GCMS) Method. *Eksakta: Jurnal Ilmu-ilmu MIPA*. 17. 98-110. 10.20885/eksakta.vol17.iss2.art2.

Husein, I.K., 2022. *Efikasi Variasi Konsentrasi Ekstrak Kulit Jengkol (*Pithecellobium lobatum* Benth) Terhadap Ulat Krop Kubis (*Crocidolomia pavonana* Fabricus)* (Doctoral dissertation, Universitas Siliwangi).

ITIS. 2023. Spodoptera litura (Fabricius, 1775). https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=941218#null. Diakses pada 3 Februari 2023 pukul 13.00 WIB.

Jeyasankar, A. and Chinnamani, T., 2017. Chemical composition and growth inhibitory activities of Solonum pseudocapsicum against Spodoptera litura and Helicoverpa armigera (Lepidoptera: Noctuidae). *Int J Entomol Res*, 2, pp.60-68.

Julianto, T. S. 2019. Fitokimia: Tinjauan Metabolit Sekunder dan Skrining Fitokimia. UII Press. Yogyakarta, hal. 9-15; 17-32.

Junior, I.I., Do Nascimento, M.A., de Souza, R.O.M.A., Dufour, A. and Wojcieszak, R., 2020. Levoglucosan: a promising platform molecule?. *Green Chemistry*, 22(18), pp.5859-5880.

Kalshoven LGE. 1981. *The Pests of Crops in Indonesia*. Laan PA van der, penerjemah. Jakarta (ID): Ichtiar Baru- van Hoeve. Terjemahan dari: De *Plagen van de Cultuurgewassen in Indonesie*.



Kardinan, Agus, 2002, Pestisida Nabati: Ramuan dan Aplikasi, Penebar Swadaya, Jakarta.

Kaur, M., A. Choudhary, I. Saraf, I.P. Singh, & S. Kaur. 2022. Efficacy of *Moringa oleifera* (Lam.) extract against *Spodoptera litura* (Fabricius), (Lepidoptera: Noctuidae). *International Journal of Tropical Insect Science*. 42:103–108. <https://doi.org/10.1007/s42690-021-00522-7>

Kaur, M., A. Choudhary, I. Saraf, I.P. Singh, & S. Kaur. 2022. Efficacy of *Moringa oleifera* (Lam.) extract against *Spodoptera litura* (Fabricius), (Lepidoptera: Noctuidae). *International Journal of Tropical Insect Science*. 42:103–108. <https://doi.org/10.1007/s42690-021-00522-7>

Kementerian Pertanian (Kementan). 2019. Pengenalan Fall Armyworm (*Spodoptera frugiperda* J. E. Smith) Hama Baru pada Tanaman Jagung di Indonesia. Jakarta (ID):Balai Penelitian Tanaman Serealia. Hal 64.

Kerem, Z, Shashou, HG & Yarden, O., 2005, Microwave-Assisted Extraction of Bioactive Saponins from Chickpea (*Cicer arietinum* L.). United Kingdom. *Journal Sci Food Agric*.

Khatun, F., M. M. E. Alam, N.S. Tithi, N. Nasrin, & M. Asaduzzaman. 2015. Evaluation of Phytochemical, Antioxidant, Anthelmintic and Antimicrobial Properties of *Crataeva Nurvala* buch. Ham. Leaves. *IJPSSR*. 6(4): 1422-1429.

Koul O, Shankar JS, Mehta N, Taneja SC, Tripathi AK, Dhar KL. 1997. Bioefficacy of crude extracts of *Aglaia* species (Meliaceae) and some active fractions against lepidopteran larvae. *J Appl Entomol*. 121:245–248.

Koul O, Singh G, Singh R, Singh J. 2005. Bioefficacy and Modeof-Action of Aglaroxin B and Aglaroxin C from *Aglaia elaeagnoidea* (syn. *A. roxburghiana*) against *Helicoverpa armigera* and *Spodoptera litura*. *Biopesticides International* 1:54–64

Kumar, D., Sharma, S. and Kumar, S., 2020. Botanical description, phytochemistry, traditional uses, and pharmacology of *Crataeva nurvala* Buch. Ham.: an updated review. *Future journal of Pharmaceutical sciences*, 6, pp.1-10.

Kumar, D.G., Deepa, P., Rathi, M.A., Meenakshi, P. and Gopalakrishnan, V.K., 2012. Modulatory effects of *Crataeva nurvala* bark against testosterone and N-methyl-N-nitrosourea-induced oxidative damage in prostate of male albino rats. *Pharmacognosy Magazine*, 8(32), p.285.

Kurniawan, A., Muhammadiyah, & A. Susanto. 2021. Efektivitas Variasi Konsentrasi ekstrak Daging Buah Bintaro sebagai Sumber Belajar Pencemaran Lingkungan.. *BIOLOVA*. 2(1).54-.63.



Laufer, S., 2005, Isolation, Sturctural Elucidation Quantification and Formulation of Saponins and Flavonoids of the *Glinus lotoides*. Faculty of Pharmacy. Tubingen. Eberhard Karls University.

Leksono, W.B., Pramesti, R., Santosa, G.W., & Setyati, W.A. 2018. Jenis pelarut metanol dan n-heksana terhadap aktivitas antioksidan ekstrak rumput laut *Gelidium* sp. dari Pantai Drini Gunungkidul – Yogyakarta. Jurnal Kelautan Tropis, 21(1): 9-16.

Lestari S, Ambarningrum TB, Pratiknyo H. 2013. Tabel hidup *Spodoptera litura* Fabricius dengan pemberian pakan meridik yang berbeda. *J Sains Vet.* 31(2): 166-179.

Loh, F.S., Awang, R.M., Omar, D. and Rahmani, M., 2011. Insecticidal properties of *Citrus hystrix* DC leaves essential oil against *Spodoptera litura* fabricius. *Journal of Medicinal Plants Research*, 5(16), pp.3739-3744.

Marhaen L, Aprianto SF, Hasyim A, Lukman L. 2016. Potensi Campuran *Spodoptera exigua* Nucleopolyhedrovirus (SeNPV) dengan Insektisida Botani untuk Meningkatkan Mortalitas Ulat Bawang *Spodoptera exigua* (Hübner) (Lepidoptera: Noctuidae) di Laboratorium. *J. Hortikultura* 26 (1): 103-112.

Marwoto dan Suharsono. 2008. Strategi dan Komponen Teknologi Pengendalian Ulat Grayak (*Spodoptera litura* Fabricius) pada Tanaman Kedelai. *J. Litbang Pertanian*. 27 (4): 131-136.

Mega, E. N. P., D. Supriyadi, & A. Sudirman. 2019. Pengaruh Ekstrak Mengkudu terhadap Mortalitas Ulat Grayak (*Spodoptera litura* F.). *Jurnal Agrosains dan Teknologi*. 4(2):95-101.

Miyahara, Y., Wakikado, T. dan Tanaka, A. 1971. Seasonal Changes in the Number and Size of the Egg-masses of *Prodenia litura*. *Japanese J. Appl. Entomol. Zool.* 15: 139-143.

Moniruzzaman M, Mannan MA, Hossen Khan MF, Abir AB, Afroze MA. 2018. The leaves of *Crataeva nurvala* Buch-Ham. modulate locomotor and anxiety behaviors possibly through GABAergic system. *BMC Compl Alternative Med.* 18:1–12

Moon DO, Kim MO, Choi YH, Kim GY. 2008. Beta-sitosterol induces G2/M arrest, endoreduplication, and apoptosis through the Bcl-2 and PI3K/Akt signaling pathways. *Cancer Lett.* 264:181–91.

Morallo-Rejesus, B., Maini, H., Sayaboc, A.S., Hernandez, H. and Quintana, E., 1992. Insecticidal actions of *Curcuma longa* L. to *Plutella xylostella* and *Nilaparvata lugens* Stal.



- Musyadah, N., Hariani, N. and Hendra, M., 2015, September. Uji efektifitas ekstrak daun tigaron (*Crateva religiosa* g. forst.) terhadap mortalitas ulat grayak (*Spodoptera litura* f.)(lepidoptera: noctuidae) di laboratorium. In *Dalam Prosiding Seminar Tugas Akhir. Universitas Mulawarman*.
- Nair, M., R., G., K. 1975. Insects and mites of crop pests in India. India: Indian Council of Agricultural Research, New Delhi.
- Nazarni R., E Harmayani, U. Santosa, P. Darmadji. 2016. Identifikasi Bakteri Asam Laktat dan Aktivitas Penghambat Penghambat Radikal pada Jaruk Tigaron Tigaron (*Crataeva nurvala*, Buch Ham). *Agritech*. 36(3):317-326.
- Nobossé, P., Fombang, E.N. and Mbafung, C.M., 2018. Effects of age and extraction solvent on phytochemical content and antioxidant activity of fresh *Moringa oleifera* L. leaves. *Food science & nutrition*, 6(8), pp.2188-2198.
- Novizan. 2002. Membuat dan Memanfaatkan Pestisida Ramah Lingkungan. PT AgroMedia Pustaka, Depok. Hal. 18 - 19, 22 - 24.
- Nugroho, L.H., Purnomo, Issirep, S. 2012. Struktur dan Perkembangan Tumbuhan (Jakarta: Penebar swadaya).
- Nurmaisah, M. W. Mau, & A. Rahim. 2023. Application of Turmeric Extract Botanical Insecticide On Feeding Activity And Mortality Of *Spodoptera Litura* Larvae. *Jurnal Pertanian Tropis*. 10(4):20-29.
- Okuda, T & Ito, H., 2011, Tannins of Contant Structure in Medical and Food Plant-Hydrolyzable Tannins and Polyphenol Related to Tannins. Tokyo. *Afr Journal Pharm Pharmacol*, 16, 2191-2217.
- Okunade, Al. 2002. *Review Ageratum conyzoides L. (Asteraceae)*. Washington DC. Fitoterapia.
- Piubelli, G.C., Hoffmann-Campo, C.B., Moscardi, F., Miyakubo, S.H. and Neves De Oliveira, M.C., 2005. Are chemical compounds important for soybean resistance to *Anticarsia gemmatalis*??. *Journal of Chemical ecology*, 31, pp.1509-1525.
- Qaderi, M.M., Martel, A.B. and Strugnell, C.A., 2023. Environmental factors regulate plant secondary metabolites. *Plants*. 12 (3): 1-27.
- Rahmi, N., 2016. *Profil Senyawa Fenolik Pada Jaruk Tigaron (Crataeva nurvala Buch. Ham) Dan Potensinya Sebagai Antibakteri* (Doctoral Dissertation, Universitas Gadjah Mada).
- Rajesh KD, Dabur R, Vasantha S, Panneerselvan A, Rajesh NV, Jeyathilakan N. 2016. Phytochemical analysis, in vitro antioxidant potential and gas

chromatography-mass spectrometry studies of *Dicranopteris linearis*. *Asian Journal of Pharmaceutical and Clinical Research.* 9(8):220–225.

Ramaiah, M. & T. U. Maheswari. 2018. Biology studies of tobacco caterpillar, *Spodoptera litura* Fabricius. *Journal of Entomology and Zoology Studies.* 6(5): 2284-2289.

Rangari, VD. 2007. *Tannin Containing Drug*. New Nandanvan. Chaturvedi College of Pharmacy.

Rao VG, Annamalai T, Mukhopadhyay T (2011) Chemical examination and biological studies on the bark of *Crataeva nurvala* Buch.-Ham. *Pharm J* 3:1–4

Rekha, B., Natarajan, V. and Prathap, B., 2024. In Vitro Antidiabetic Activity of Ethanolic Extract from *Justicia tranquebariensis*: Insights from GC-MS Analysis and Computational Docking. *Nanotechnology Perceptions*, pp.397-407.

Riza,V. dan Tahjadi, 2001. Alternatif Pengendalian Hama. PAN Indonesia. Jakarta. Hal 63.

S. Rahayu, R. Vifta, and J. Susilo, "Uji Aktivitas Antioksidan Ekstrak Etanol Bunga Telang (*Clitoria Ternatea* L.) dari Kabupaten Lombok Utara dan Wonosobo menggunakan Metode FRAP," *Generics: Journal of Research in Pharmacy*, vol. 1, no. 2, pp. 1 - 9, Oct. 2021. <https://doi.org/10.14710/genres.v1i2.9836>

Sa'adah, N. S. S., Sukirno, H. Alwandri, L.H. Nugroho, & T.R. Nuringtyas. 2022. A Meta-Analysis Study on *Spodoptera exigua* and *Spodoptera litura* Control: Biopesticides vs. Synthetic Pesticides. *Advances in Biological Sciences Research.* 22: 519-527.

Sabaruddin. 2021. Application of Garlic (*Allium sativum* L) Vegetable Pesticides for Control of armyworm pests (*Spodoptera litura*) on chili plants (*Capsicum annum* L). *Jurnal Agroekoteknologi Tropika Lembab.* 3(2):121-126.

Sahoo S, Mishra SK, Panda PK, Tripathy S, Mishra SR, Ellaiah P, Dah SK. 2008. Antimycotic potential of *Crataeva Religiosa* Hook and Forst against some selected fungal pathogens. *Acta Pol Pharm.* 65:245–247

Sanchez, S. and Demain, A. L. 2019. ‘Secondary metabolites’, Comprehensive Biotechnology. hal.: 131–143. doi: 10.1016/B978-0-444-64046-8.00012-4

Sari, M., L. Lubis, & Y. Pangestiningsih. 2013. Uji Efektivitas Beberapa Insektisida Nabati untuk Mengendalikan Ulat Grayak (*Spodoptera litura* F.) (Lepidoptera : Noctuidae) di Laboratorium. *Jurnal Online Agroekoteknologi.* 1(30):560-569.



Setiawati, W., Murtiningsih, R., Gunaeni, N., & Rubiati, T. 2008. *Tumbuhan bahan pestisida nabati dan cara pembuatannya untuk pengendalian organisme pengganggu tumbuhan (OPT)*. Balai Penelitian Tanaman Sayuran.

Shen, N., Liu, H.Y., Mou, T.Y., Ma, Y.B., Li, Y., Song, Z.J., Tang, T., Han, Z.J. and Zhao, C.Q., 2022. Novel meta-diamide insecticide, broflanilide, suppresses the population of common cutworm *Spodoptera litura* through its lethal and sublethal effects. *Pest Management Science*, 78(3), pp.1081-1089.

Shorey, H. H., & Hale, R. L. 1965. Mass-Rearing of the Larvae of Nine Noctuid Species on a Simple Artificial Medium12. *Journal of Economic Entomology*, 58(3), 522–524. <https://doi.org/10.1093/jee/58.3.522>

Silva, D.M.D., Bueno, A.D.F., Andrade, K., Stecca, C.D.S., Neves, P.M.O.J. and Oliveira, M.C.N.D., 2017. Biology and nutrition of *Spodoptera frugiperda* (Lepidoptera: Noctuidae) fed on different food sources. *Scientia Agricola*, 74, pp.18-31.

Soosamma J, Madhavi T, Raj B, Shaji J, Vinutha .2010. Phytochemistry and pharmacology of an important Indian medicinal plant *Crataeva nurvala* Buch Ham. *Res J Pharmacogn Phytochem*. 2:275–280

Sundar B, Rashmi V, Sumith HK, Sandhya. 2018. Study the incidence and period of activity of *Spodoptera litura* on soybean. *Journal of Entomology and Zoology Studies*. 6(5): 331-333.

Sutriono, M. Wulandari, F.H. Panggabean, S. Rahayu, & A. Kinanti. 2022. Pengaruh Berbagai Pestisida Nabati terhadap Mortalitas Ulat Grayak (*Spodoptera litura* F.). *Prosiding Seminar Nasional Multidisiplin Ilmu Universitas Asahan ke-5*. 489-496.

Tadera, K., Minami, Y., Takamatsu, K. and Matsuoka, T. 2006. Inhibition of alpha-glucosidase and alphaamylase by flavonoids. *Journal of Nutritional Science and Vitaminology (Tokyo)* 52(2): 149-153

Taufika, R., Sumarmi, S. and Nugroho, S.A., 2020. Efek subletal campuran ekstrak daun srikaya (*Annona squamosa* L.) dan rimpang kunyit (*Curcuma domestica* Val.) terhadap larva *Spodoptera litura* F. *Agromix*, 11(1), pp.66-78.

Thamrin, M, S Asikin, M Willis. 2013. Tumbuhan Kirinyuh *Chromolaena Odorata* (L) (Asteraceae: Asterales) sebagai Insektisida Nabati untuk Mengendalikan Ulat Grayak *Spodoptera litura*. 32(3): 112–21.

Tiwari P, Kumar B, Kaur M, Kaur G, dan Kaur H. 2011. Phytochemical screening and extraction: a review. *Internationale Pharmaceutica Scientia*. vol 1(1): 98-106.



Tong, H., Q. Su, X. Zhou, L. Bai. 2013. Field resistance of *Spodoptera litura* (Lepidoptera: Noctuidae) to organophosphates, pyrethroids, carbamates and four newer chemistry insecticides in Hunan, China. *Journal of Pest Science*. 86(3): 599-609.

Vasantha-Srinivasan, P., Unni, P.K.S., Karthi, S., Ganesan, R., Senthil-Nathan, S., Chellappandian, M., Radhakrishnan, N., Rajagopal, R. and Patcharin, K., 2024. Bio-efficacy of chloroform crude extracts of chick weed *Ageratum conyzoides* (Linn.) against the tobacco cutworm *Spodoptera litura* (Linn.) and their non-toxicity against the beneficial earthworm. *Journal of King Saud University-Science*, 36(1), p.102930.

Vetal, D. S. & A. B. Pardeshi. 2019. Insecticidal potential of ethanol and hexane solvent seed extract of *Annona squamosa* against *Spodoptera litura* Fab. *Journal of Pharmacognosy and Phytochemistry*. 8(3): 842-845.

Vetal, D. S. & A. B. Pardeshi. 2019. Insecticidal potential of ethanol and hexane solvent seed extract of *Annona squamosa* against *Spodoptera litura* Fab. *Journal of Pharmacognosy and Phytochemistry*. 8(3): 842-845.

Wahyuni, D. and Anggraini, R., 2018. Uji efektifitas ekstrak daun srikaya (*Annona squamosa*) terhadap kematian kecoa amerika (*Periplaneta americana*). *Photon: Jurnal Sain Dan Kesehatan*, 8(2), pp.143-151.

Walia N, Kaur A, Babbar SB. 2007. An efficient, in vitro cyclic production of shoots from adult trees of *Crataeva nurvala* Buch. Ham. *Plant Cell Rep*. 26: 277–284

Wang HX, Ng TB. 1999. Natural products with hypoglycemic hypotensive, hypocholesterolemic, antiatherosclerotic and antithrombotic activities. *Life Sci* . 65:2663–77.

Wang HX, Ng TB. 1999. Natural products with hypoglycemic hypotensive, hypocholesterolemic, antiatherosclerotic and antithrombotic activities. *Life Sci* . 65:2663–77.

Yuliani & Y. S. Rahayu. 2021. The Potency of *Ageratum conyzoides* as Biopesticide. *Advances in Biological Sciences Research*. 4:419-422.

Yuniarti, G.T., A.R. Thamrin, Lusyian, B. Sutiya, & Kurdiyah. 2023. Phytochemical Test of Tigarun Plant (*Crataeva nurvala* Buch Ham). *Jurnal Hutan Tropis Volume*. 11(2): 267-272.

Yusuf, R. 2012. Potensi dan Kendala Pemanfaatan Pestisida Nabati dalam Pengendalian Hama pada Budidaya Sayuran Organik. *Prosiding Seminar UR-UKM ke-7*. 171-173.



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Kandungan Senyawa Bioaktif Ekstrak Daun Tigarun (*Crataeva nurvala buch.*) dan Efektivitasnya

sebagai

Bioinsektisida Ulat Grayak *Spodoptera litura* (Fabricius, 1775)

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- Zhu, J. 2008. Mosquito Larvicidal Activity of Botanical-Based Mosquito Repellents. *Journal of the American Mosquito Control Association*, 24(1):161-16.