

Comparative Study of Different Species of Tulsi for Lanvicidal Activity

Gaurav Balu Gadge, Rachna B. Kamble, Kalpesh Chotu Prajapati, Ajay Kandhare

Samarth Institute of Pharmacy, Belhe, Pune, India

Abstract: Basil is a fragrant, small tree or shrub native to warm and temperate regions of the world. The larvicidal activity of essential and different oils of *B. santo*, *B. basilicum*, and *B. fragrans* was compared on laboratory-collected and field-collected *Culex quinquefasciatus* larvae. Thin layer chromatography analysis showed that all three strains were similar; the results indicated the presence of steroids and triterpenoids. Larvicidal activity is determined by the 24-hour LD₅₀ against third instar or early fourth instar larvae. Comparison of LD₅₀ values showed that *O. basilicum* was the more effective of the two species. His LD₅₀ value. *Basilicum* and *O. sainttum* oil were determined to be 39.31 and 40.02, respectively, in larvae reared in the laboratory, and 129.53 and 139.49, respectively, in larvae collected in the field. Laboratory-reared larvae are more sensitive than field-collected larvae.

Keywords: Basil quinquefasciatus Larvised LD₅₀ value

REFERENCES

- [1]. Wakasugi, M.; Kawamura, K.; Yamamoto, S.; Kazama, J.J.; Narita, I. High mortality rate of infectious diseases in dialysis patients: A comparison with the general population in Japan. *Ther. Apher. Dial.* 2012, *16*, 226–231. [Google Scholar] [CrossRef] [PubMed]
- [2]. Casadevall, A. Climate change brings the specter of new infectious diseases. *J. Clin. Investig.* 2019, *130*, 553–555. [Google Scholar] [CrossRef] [PubMed][Green Version]
- [3]. Thaden, J.T.; Li, Y.; Ruffin, F.; Maskarinec, S.A.; Hill-Rorie, J.M.; Wanda, L.C.; Reed, S.D.; Fowler, V.G., Jr. Increased Costs Associated with Bloodstream Infections Caused by Multidrug-Resistant Gram-Negative Bacteria Are Due Primarily to Patients with Hospital-Acquired Infections. *Antimicrob. Agents Chemother.* 2017, *61*, 01709–01716. [Google Scholar] [CrossRef] [PubMed][Green Version]
- [4]. Peterson, E.; Kaur, P. Antibiotic Resistance Mechanisms in Bacteria: Relationships Between Resistance Determinants of Antibiotic Producers, Environmental Bacteria, and Clinical Pathogens. *Front. Microbiol.* 2018, *9*, 2928. [Google Scholar] [CrossRef]
- [5]. Govindarajan, M.; Sivakumar, R.; Rajeswary, M.; Yogalakshmi, K. Chemical composition and larvicidal activity of essential oil from *Ocimum basilicum* (L.) against *Culex tritaeniorhynchus*, *Aedes albopictus* and *Anopheles subpictus* (Diptera: Culicidae). *Exp. Parasitol.* 2013, *134*, 7–11. [Google Scholar] [CrossRef]
- [6]. Sumitha, K.V.; Thoppil, J.E. Larvicidal efficacy and chemical constituents of *O. gratissimum* L. (Lamiaceae) essential oil against *Aedes albopictus* Skuse (Diptera: Culicidae). *Parasitol. Res.* 2015, *115*, 673–680. [Google Scholar] [CrossRef]
- [7]. Scalvenzi, L.; Radice, M.; Toma, L.; Severini, F.; Boccolini, D.; Bella, A.; Guerrini, A.; Tacchini, M.; Sacchetti, G.; Chiurato, M.; et al. Larvicidal activity of *Ocimum campechianum*, *Ocotea quixos* and *Piper aduncum* essential oils against *Aedes aegypti*. *Parasite* 2019, *26*, 23. [Google Scholar] [CrossRef][Green Version]
- [8]. Gbolade, A.A.; Lockwood, G.B. Toxicity of *Ocimum sanctum* L. Essential oil to *Aedes aegypti* Larvae and its Chemical Composition. *J. Essent. Oil Bear. Plants* 2008, *11*, 148–153. [Google Scholar] [CrossRef]
- [9]. Cavalcanti, E.S.B.; De Morais, S.M.; Lima, M.A.A.; Santana, E.W.P. Larvicidal Activity of essential oils from Brazilian plants against *Aedes aegypti* L. *Memórias Do Inst. Oswaldo Cruz* 2004, *99*, 541–544. [Google Scholar] [CrossRef]



IJARSCT

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

IJARSCT

ISSN (Online) 2581-9429

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Impact Factor: 7.53

Volume 4, Issue 1, March 2024

- [10]. Yamani, H.A.; Pang, E.C.; Mantri, N.; Deighton, M.A. Antimicrobial Activity of Tulsi (*Ocimum tenuiflorum*) Essential Oil and Their Major Constituents against Three Species of Bacteria. *Front. Microbiol.* 2016, *7*, 681. [Google Scholar] [CrossRef][Green Version]
- [11]. Matasyoh, L.G.; Matasyoh, J.C.; Wachira, F.; Kinyua, M.G.; Muigai, A.W.T.; Mukama, T.K. Antimicrobial activity of essential oils of *Ocimum gratissimum* L. from different populations of Kenya. *Afr. J. Tradit. Complement. Altern. Med.* 2008, *5*, 187–193. [Google Scholar] [CrossRef] [PubMed][Green Version]
- [12]. Benitez, N.P.; León, E.M.M.; Stashenko, E.E. Eugenol and methyl eugenol chemotypes of essential oil of species *Ocimum gratissimum* L. and *Ocimum campechianum* Mill. from Colombia. *J. Chromatogr. Sci.* 2009, *47*, 800–803. [Google Scholar] [CrossRef] [PubMed][Green Version]
- [13]. Ilić, Z.S.; Milenković, L.; Šunić, L.; Tmušić, N.; Mastilović, J.; Kevrešan, Ž.; Stanojević, L.; Danilović, B.; Stanojević, J. Efficiency of Basil Essential Oil Antimicrobial Agents under Different Shading Treatments and Harvest Times. *Agronomy* 2021, *11*, 1574. [Google Scholar] [CrossRef]
- [14]. Karamaouna, F.; Kimbaris, A.; Michaelakis, A.; Papachristos, D.; Polissiou, M.; Papatsakona, P.; Tsora, E. Insecticidal Activity of Plant Essential Oils Against the Vine Mealybug, *Planococcus ficus*. *J. Insect Sci.* 2013, *13*, 1–13. [Google Scholar] [CrossRef] [PubMed][Green Version]
- [15]. Rodríguez-González, Á.; Álvarez-García, S.; González-López, Ó.; Da Silva, F.; Casquero, P.A. Insecticidal Properties of *Ocimum basilicum* and *Cymbopogon winterianus* against *Acanthoscelides obtectus*, Insect Pest of the Common Bean (*Phaseolus vulgaris* L.). *Insects* 2019, *10*, 151. [Google Scholar] [CrossRef]

