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File name: d_biological_activity_of_essential_oils_from_Psidium_guajava....
File size: 930.23K
Page count: 4
Word count: 2,394
Character count: 12,090
Submission date: 02-Nov-2021 12:22PM (UTC+0700)
Submission ID: 1690783184



RASAYAN J. Chem.
Vol. 14 | No. 2 | 1312-1315 | April - June | 2021
ISSN: 0974-1496 | e-ISSN: 0976-5083 | CODEN: RJCAMP
<http://www.rasayanjournal.com>

CHEMICAL PROFILE AND BIOLOGICAL ACTIVITY OF ESSENTIAL OILS FROM *Psidium guajava* GROWN IN TIMOR ISLAND-EASTERN INDONESIA

Antonius R. B. Ola^{1,2,✉}, Yosefa Cysilia Bheku Dje^{1,2}, Agustina E. Nahas¹, Petronela Nenotek¹, Theo Da Cunha¹, Dodi Darmakusuma^{1,2}, Henderiana L. L. Belli² and Herianus J. D. Lale^{1,3}

¹Department of Chemistry, Faculty of Science and Engineering, University of Nusa Cendana, Kupang-NTT 85118, Indonesia

²Biosains Research Center Laboratory, University of Nusa Cendana, Kupang-NTT 85118, Indonesia

³Agrotechnology Department, Faculty of Agriculture, Nusa Cendana University, Kupang-NTT 85118, Indonesia

✉Corresponding Author: antonius.ola@staf.undana.ac.id

ABSTRACT

Psidium guajava was abundantly found in arid land of Timor and traditionally used for treatment against diarrhea. Research had been performed to analyze the chemical profiles together with antibacterial and fruit flies attractant activity of the leaf essential oil from *P. guajava*. The powder of dried leaves was subjected to hydro-distillation using Clevenger apparatus to obtain essential oil with a yield of 0.5%. Analysis of GC-MS spectra revealed that limonene and β -caryophyllene were the main components of the essential oil. The essential oil showed strong antibacterial activity with the zone inhibition was observed at 16.3 for *Staphylococcus aureus* and 15.9 mm for *Escherichia coli*. On the other hand, no fruit flies were trapped during the field test in guava fruit.

Keywords: *Psidium guajava*, Timor Island, Essential Oil, Fruit Fly, Antibacterial.

INTRODUCTION

Timor Island is in Eastern Indonesia composed of mostly warm semi-arid lands due to the exceptionally high solar radiation and water shortage.¹ Therefore, medicinal plants are required to adapt with higher ecological stress² as for optimum growth, the medicinal plants need enough water.³ *Psidium guajava* locally known as *Guajava* was one of the medicinal plants that grow widely in semi-arid lands of Timor. The leaves and fruit of *Guajava* (*P. guajava*) have been used as one of the alternative treatments against diarrhea.

The medicinal properties of plants might be due to the presence of the chemical metabolites inside the plants including leaves and fruits.^{4,5} Moreover, chemical components are known to contribute the plant adaptation against pathogens, herbivores, and drought. For example, higher production of β -caryophyllene from *Arabidopsis thaliana* was caused by the invasion of pathogenic *Pseudomonas syringae* to the flower of the plant.⁶ β -caryophyllene had been also reported to attract specifically the guava fruit fly *Bactrocera corecea*⁷ and one of the main metabolites of the essential oil from *P. guajava*.⁸ As chemical metabolites were responsible for the medicinal and ecological properties of the plant, this study was aimed to investigate the profile of chemical components together with antibacterial activity and fruit fly attractant potency of guava leaf oil from Timor Island and Indonesia for the first time.

EXPERIMENTAL

Material
Fresh leaves of *Guajava* (*Psidium guajava*) were taken from Timor Island (Kefameranu) in the Province of East Nusa Tenggara, Indonesia. The leaves were then brought to the Laboratory of Bioscience of Universitas Nusa Cendana.

Rasayan J. Chem., 14(2), 1312-1315(2021)
<http://dx.doi.org/10.31788/RJC.2021.1426125>

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