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Dr Rozirwan Rozirwan:

Thank you for submitting the manuscript, "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: <https://ejournal.undip.ac.id/index.php/ijms/author/submission/51137>

Noted with thanks.

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Thank you for the information.

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# Requested a Revision-1

Rozirwan unsri &lt;rozirwan@unsri.ac.id&gt;

## [IK.IJMS] Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts

2 pesan

Indonesian Journal of Marine Science &lt;ijms.undip@gmail.com&gt;

4 Januari 2023 pukul 21.08

Balas Ke: Indonesian Journal of Marine Science &lt;ijms.undip@gmail.com&gt;

Kepada: Rozirwan Rozirwan <rozirwan@unsri.ac.id>, Muhtadi Muhtadi <muhtaditadi0707@gmail.com>, Tengku Zia Ulqodry <zia\_uul@unsri.ac.id>, Redho Yoga Nugroho <redhoyn.29@gmail.com>, Nadila Nur Khotimah <nadilakhotimah1142@gmail.com>, Fauziyah Fauziyah <fauziyah@unsri.ac.id>, Wike Ayu Eka Putri <wike\_ayu\_ep@unsri.ac.id>, Andi Agussalim <andiagussalim75@gmail.com>

Dear

Rozirwan

Department of Marine Science, Faculty of Mathematics and Natural Sciences, Universitas Sriwijaya

Thank you for submitting your manuscript "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. The editorial team and a group of expert reviewers have assessed your submission and feel that it has potential for publication, so we would like to invite you to revise the paper and resubmit for further review.

Comments :

1. add one author affiliation overseas
2. abstract must in 250 words
3. Keywords max 5 words
4. Figure 1 replace with a map of the research format or delete
5. Figure 3 part Structure Compounds figure not clear (low resolution)

We ask that you submit the revised version of your manuscript by uploading your manuscript in Review - Author Version. Please note, your revised manuscript should be accompanied by a summary of your responses to the reviewers' comments.

You have 1 week to respond to this revision and resubmit the request ending on January 11, 2023, after which point we will presume that you have withdrawn your submission from ILMU KELAUTAN: Indonesian Journal of Marine Sciences.

Please feel free to contact me with any questions.

Sincerely,

Editor Teams IJMS

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**Roziwan unsri** <roziwan@unsri.ac.id>

4 Januari 2023 pukul 21.33

Kepada: Indonesian Journal of Marine Science <ijms.undip@gmail.com>

Cc: Muhtadi Muhtadi <muhtaditadi0707@gmail.com>, Tengku Zia Ulqodry <zia\_uul@unsri.ac.id>, Redho Yoga Nugroho <redhoyn.29@gmail.com>, Nadila Nur Khotimah <nadilakhotimah1142@gmail.com>, Fauziah Fauziah <fauziah@unsri.ac.id>, Wike Ayu Eka Putri <wike\_ayu\_ep@unsri.ac.id>, Andi Agussalim <andiagussalim75@gmail.com>

Thank you for the information.

We will make revisions as soon as possible with the directions that have been previously informed.

Warm regards

[Kutipan teks disembunyikan]

## Response to Reviewers

Reviewer	Response to Reviewer
1. Add one author affiliation overseas	<p>Revised, “we have added an author author affiliation overseas”</p> <p>Che Abd Rahim Mohamed  <sup>3</sup>Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia</p>
2. Abstract must in 250 words	Abstract in the manuscript is in 250 words (250 words)
3. Keywords max 5 words	<p>Revised, “Keywords in the manuscript are four words”</p> <p>“Insecticidal, Mangrove, Phytochemical, Toxicity”</p>
4. Figure 1 replace with a map of the research format or delete	We have checked
5. Figure 3 part Structure Compounds figure not clear (low resolution)	We have checked



Rozirwan unsri &lt;rozirwan@unsri.ac.id&gt;

---

**[IK.IJMS] [ID-51137] Revised Version Acknowledgement**

2 pesan

**Ambariyanto** <ijms@live.undip.ac.id>

10 Januari 2023 pukul 11.06

Balas Ke: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Kepada: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Dr Rozirwan Rozirwan:

Thank you for submitting the revision of manuscript, "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: <https://ejournal.undip.ac.id/index.php/ijms/author/submission/51137>

Username: rozirwan

Editor: Ambariyanto

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Ambariyanto

ILMU KELAUTAN: Indonesian Journal of Marine Sciences

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INDONESIAN JOURNAL OF MARINE SCIENCE<http://ejournal.undip.ac.id/index.php/ijms>

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**Ambariyanto** <ijms@live.undip.ac.id>

10 Januari 2023 pukul 11.06

Balas Ke: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Kepada: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

[Kutipan teks disembunyikan]



## Requested a Revision-2

Rozirwan unsri <rozirwan@unsri.ac.id>

### [IK.IJMS] Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts

2 pesan

Indonesian Journal of Marine Science <ijms.undip@gmail.com>

30 Januari 2023 pukul 11.59

Balas Ke: Indonesian Journal of Marine Science <ijms.undip@gmail.com>

Kepada: Rozirwan Rozirwan <rozirwan@unsri.ac.id>, Muhtadi Muhtadi <muhtaditadi0707@gmail.com>, Tengku Zia Ulqodry <zia\_uul@unsri.ac.id>, Redho Yoga Nugroho <redhoyn.29@gmail.com>, Nadila Nur Khotimah <nadilakhotimah1142@gmail.com>, Fauziyah Fauziyah <fauziyah@unsri.ac.id>, Wike Ayu Eka Putri <wike\_ayu\_ep@unsri.ac.id>, Andi Agussalim <andiagussalim75@gmail.com>

Dear  
Rozirwan

Thank you for submitting your manuscript " Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. The editorial team and a group of expert reviewers have assessed your submission and feel that it has potential for publication, and so we would like to invite you to revise the paper and resubmit for further review.

Comments :

1. add one author affiliation overseas
2. abstract must in 250 words
3. Keywords max 5 words
4. Check reference and citation
5. Reference 30 source publish in 2015-2022 from international journal
6. Reference using harvard style

We ask that you submit the revised version of your manuscript by Upload your manuscript in Review - Author Version. Please note, your revised manuscript should be accompanied by a summary of your responses to the reviewers' comments.

You have 1 week to respond to this revision and resubmit the request ending on February 6, 2023, after which point we will presume that you have withdrawn your submission from ILMU KELAUTAN: Indonesian Journal of Marine Sciences.

Please feel free to contact me with any questions.

Sincerely,

Editor Teams IJMS

INDONESIAN JOURNAL OF MARINE SCIENCE

<http://ejournal.undip.ac.id/index.php/ijms>

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**Roziwan unsri** <roziwan@unsri.ac.id>

30 Januari 2023 pukul 12.30

Kepada: Indonesian Journal of Marine Science <ijms.undip@gmail.com>

Dear Editor

Thank you for the information. We will send the revised version as soon as possible.

Regards

[Kutipan teks disembunyikan]

--

**Dr. Roziwan**

Head of Marine Bioecology Laboratory

Department of Marine Science

Faculty of Mathematics and Natural Sciences

Sriwijaya University

Jalan Raya Palembang-Prabumulih KM 32, Indralaya

Ogan Ilir, Sumatera Selatan, Indonesia, Pos Code: 30862

Email: [roziwan@unsri.ac.id](mailto:roziwan@unsri.ac.id), [roziwan@gmail.com](mailto:roziwan@gmail.com)

## Response to Reviewers

Reviewer	Response to Reviewer
1. Add one author affiliation overseas	Revised, “we have added an author author affiliation overseas”  Che Abd Rahim Mohamed <sup>3</sup> Faculty of Science and Technology,Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia
2. Abstract must in 250 words	Abstract in the manuscript is in 250 words (250 words)
3. Keywords max 5 words	Revised, “Keywords in the manuscript are four words” “Insecticidal, Mangrove, Phytochemical, Toxicity”
4. Check reference and citation	We have checked
5. Reference 30 source publish in 2015-2022 from international journal	We have checked
6. Reference using harvard style	We have checked





Rozirwan unsri &lt;rozirwan@unsri.ac.id&gt;

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**[IK.IJMS] [ID-51137] Revised Version Acknowledgement**

1 pesan

**Ambariyanto** <ijms@live.undip.ac.id>

5 Februari 2023 pukul 23.07

Balas Ke: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Kepada: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Dr Rozirwan Rozirwan:

Thank you for submitting the revision of manuscript, "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: <https://ejournal.undip.ac.id/index.php/ijms/author/submission/51137>

Username: rozirwan

Editor: Indonesian Journal of Marine Science

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Ambariyanto

ILMU KELAUTAN: Indonesian Journal of Marine Sciences

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INDONESIAN JOURNAL OF MARINE SCIENCE<http://ejournal.undip.ac.id/index.php/ijms>



# Requested a Revision-3

Rozirwan unsri <rozirwan@unsri.ac.id>

## [IK.IJMS] Editor Decision - Reviewer C

1 pesan

Indonesian Journal of Marine Science <ijms.undip@gmail.com>

22 Februari 2023 pukul 23.46

Balas Ke: Indonesian Journal of Marine Science <ijms.undip@gmail.com>

Kepada: Dr Rozirwan Rozirwan <rozirwan@unsri.ac.id>

Cc: Muhtadi Muhtadi <muhtaditadi0707@gmail.com>, Tengku Zia Ulqodry <zia\_uul@unsri.ac.id>, Redho Yoga Nugroho <redhoyn.29@gmail.com>, Nadila Nur Khotimah <nadilakhotimah1142@gmail.com>, Fauziyah Fauziyah <fauziyah@unsri.ac.id>, Wike Ayu Eka Putri <wike\_ayu\_ep@unsri.ac.id>, Andi Agussalim <andiagussalim75@gmail.com>, Che Abd Rahim Mohamed <carmohd@ukm.edu.my>

Dr Rozirwan Rozirwan:

We have reached a decision regarding your submission to ILMU KELAUTAN: Indonesian Journal of Marine Sciences, "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts".

Our decision is to:  
Revision Required

Indonesian Journal of Marine Science  
[ijms.undip@gmail.com](mailto:ijms.undip@gmail.com)

Reviewer C:

The manuscript is well designed and written in a scientific manner. However, the manuscript contains many grammatical and spelling mistakes, which must be corrected for acceptance in the journal. The authors didn't use any statistical analysis hence they are advised to calculate the result and express these with standard deviation.

- "The insecticidal activity test of the samples". Write it as "The insecticidal activity of the samples"
- "Furthermore, analysis of the phytochemical profile using GC-MS." Incomplete sentence.
- Mention latitude and longitude of sample collection site in material method part.
- "They were measuring environmental parameters at the sampling site." Write the sentence in passive voice.
- Where are the table 2 and table 3?
- Why did author choose only methanol, ethyl acetate and hexane for extraction of phyto-chemicals?
- Table 7 and 8: 10000 mg/L is not mentioned in Table 1.
- How many replicates were taken for insecticidal activity? Mention standard deviation ( $\pm$ SD) in each table.
- "The mass spectrum of the 1st peak.....and retention time of 26.49 minutes was 1, 4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester,". Delete completely since it is mentioned in the table 11.
- "Phthalic acid compound, di(2 propylpentyl) ester has ..... activity". Write it as Phthalic acid, di(2 propylpentyl) ester compound has...

- Rozirwan et al., A total of 7 references of this. Limit this only up to 4.
- The manuscript contains a lot of spelling and grammatical mistakes. Authors must correct all of these carefully.
- All scientific names should be in italics. A few incomplete sentences.

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INDONESIAN JOURNAL OF MARINE SCIENCE

<http://ejournal.undip.ac.id/index.php/ijms>

## Response to Reviewers

Reviewer	Response to Reviewer
1. The insecticidal activity test of the samples". Write it as "The insecticidal activity of the samples"	Revised, "we have written the sentence according to the suggestion"
2. "Furthermore, analysis of the phytochemical profile using GC-MS." Incomplete sentence.	Revised, "The sentence has been changed to a complete sentence (S+V+O)"  Furthermore, the phytochemical profile was analyzed using GC-MS
3. Mention latitude and longitude of sample collection site in material method part.	Revised, "We have added the coordinate of sampling location"  2.160000 S° and 104.896389 E°
4. "They were measuring environmental parameters at the sampling site." Write the sentence in passive voice.	Revised to "Environmental parameters were measured at the sampling location"
5. Where are the table 2 and table 3?	We have missed it, so Table 4 became Table 2, Table 5 became to Table 3, Table 6 became to Table 4 and so on . .
6. Why did author choose only methanol, ethyl acetate and hexane for extraction of phyto-chemicals?	We choosed methanol ,ethyl acetate and hexane because to represent each type of polar, semi-polar, and non-polar. The third solvent is also very common and easy to obtain and economical
7. Table 7 and 8: 10000 mg/L is not mentioned in Table 1.	Revised, "We have added the concentration"

8. How many replicates were taken for insecticidal activity? Mention standard deviation ( $\pm$ SD) in each table.	Revised, "We have mentioned standard deviation ( $\pm$ SD) in each table"
9. "The mass spectrum of the 1st peak.....and retention time of 26.49 minutes was 1, 4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester,". Delete completely since it is mentioned in the table 11.	Revised, "We have deleted it according to suggestion"
10. "Phthalic acid compound, di(2 propylpentyl) ester has ..... activity". Write it as Phthalic acid, di(2 propylpentyl) ester compound has...	Revised, "We have written it according to suggestion"
11. Rozirwan et al., A total of 7 references of this. Limit this only up to 4.	Revised, "We have made it to 4 references according to suggestion"
12. The manuscript contains a lot of spelling and grammatical mistakes. Authors must correct all of these carefully.	Revised, "We have corrected it carefully"
13. All scientific names should be in italics. A few incomplete sentences.	Revised, "We have corrected it carefully"



Rozirwan unsri &lt;rozirwan@unsri.ac.id&gt;

---

**[IK.IJMS] [ID-51137] Revised Version Acknowledgement**

1 pesan

**Ambariyanto** <ijms@live.undip.ac.id>

27 Februari 2023 pukul 15.10

Balas Ke: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Kepada: Dr Rozirwan Rozirwan &lt;rozirwan@unsri.ac.id&gt;

Dr Rozirwan Rozirwan:

Thank you for submitting the revision of manuscript, "Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts" to ILMU KELAUTAN: Indonesian Journal of Marine Sciences. With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

Manuscript URL: <https://ejournal.undip.ac.id/index.php/ijms/author/submission/51137>

Username: rozirwan

Editor: Indonesian Journal of Marine Science

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Ambariyanto

ILMU KELAUTAN: Indonesian Journal of Marine Sciences

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INDONESIAN JOURNAL OF MARINE SCIENCE<http://ejournal.undip.ac.id/index.php/ijms>

# Insecticidal Activity and Phytochemical Profiles of *Avicennia marina* and *Excoecaria agallocha* Leaves Extracts

Rozirwan<sup>1\*</sup>, Muhtadi<sup>2</sup>, Tengku Zia Ulqodry<sup>1</sup>, Redho Yoga Nugroho<sup>2</sup>, Nadila Nur Khotimah<sup>2</sup>, Fauziah<sup>1</sup>, Wike Ayu Eka Putri<sup>1</sup>, Andi Agussalim<sup>1</sup>, Che Abd Rahim Mohamed<sup>3</sup>

<sup>1</sup>Department of Marine Science, Faculty of Mathematics and Natural Sciences, Universitas Sriwijaya, Indralaya 30862, South Sumatra, Indonesia

<sup>2</sup>Environmental Management Study Program, Graduate Program, Universitas Sriwijaya, Palembang 30139, Indonesia

<sup>3</sup>Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

Email: [rozirwan@unsri.ac.id](mailto:rozirwan@unsri.ac.id)

## Abstract

Toxic bioactive compounds can be obtained from various mangrove plants that have the potential to be developed in agriculture as bioinsecticides. The coast of South Sumatra has relatively abundant *Avicennia marina* and *Excoecaria agallocha* vegetation. This study was conducted to analyze the bioactivity of insecticides and the phytochemical profiles of mangrove leaves *A. marina* and *E. agallocha* was extracted with methanol, ethyl acetate, and *n*-hexane from the most toxic extract fraction. Samples were obtained from the Barong River in Sembilang National Park, Banyuasin Regency. The insecticidal activity of the samples was carried out on *Gryllus bimaculatus* and *Tenebrio molitor*. Furthermore, the phytochemical profile was analyzed using GC-MS. Based on the results of insecticidal activity on *G. bimaculatus*, the respective  $LC_{50}$  values of *A. marina* and *E. agallocha* extracts for the hexane fraction were 12,562 mg.L<sup>-1</sup> and 15,464 mg.L<sup>-1</sup>, ethyl acetate 9,986 mg.L<sup>-1</sup> and 10,292 mg.L<sup>-1</sup>, methanol 6,454 mg.L<sup>-1</sup> and 6,969 mg.L<sup>-1</sup>. Whereas in *T. molitor*, the  $LC_{50}$  values for the hexane fraction were 10,682 mg.L<sup>-1</sup> and 11,070 mg.L<sup>-1</sup>, ethyl acetate 9,065 mg.L<sup>-1</sup> and 9,269 mg.L<sup>-1</sup>, methanol 4,799 mg.L<sup>-1</sup>, and 5,408 mg.L<sup>-1</sup>. The results of GC-MS analysis on the methanol extract of *A. marina* leaves which contained phytochemical compounds such as alcohol, lauric acid, myristic, linoleic, elaidate, stearate, endogenous, olead, phthalic ester, and siloxane. Based on the insecticide toxicity category, the insecticidal activity of both *A. marina* and *E. agallocha* leaves extracts were low and non-toxic. Further research is needed regarding variations in anti-insecticide of mangrove extract measurements in the future studies.

**Keywords:** Insecticidal, Mangrove, Phytochemical, Toxicity

## Introduction

One of the main ways to eliminate food and environmental poverty in the world is to make agriculture more environmentally friendly to create a balance between the production of materials for population growth and food security (Zegeye *et al.*, 2022). Problems are the main obstacle to achieving higher crop production (Souto *et al.*, 2021). So far, the control of agricultural pests is still very dependent on synthetic insecticides for land protection and post-harvest crops (Bertomeu-Sánchez, 2019). The use of synthetic insecticides can cause failure in pest control due to unwanted side effects on plants and the rapid evolution of insecticide resistance in agroecosystems (Alfaro-Tapia *et al.*, 2021). It not only impacts plants and the environment, but also humans who are in direct contact with synthetic insecticides that can cause cancer, hypertension, kidney failure, lung damage, and neurological disorders (Krishnamurthy *et al.*, 2020). Therefore, discoveries related to new natural pesticides are urgently needed to prevent damage to crops and not to the environment (Rahman *et al.*, 2021).



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## [IK.IJMS] Proof Layout - ID:51137

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Dear

Rozirwan

Universitas Sriwijaya

Please check the manuscript proof. You can use the file in this email attachment to make the corrections to the manuscript.

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Manuscript revision and proof of payment are sent before 7 June, 2023

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IJMS Editor







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DOI: <https://doi.org/10.14710/ik.ijms.28.2.148-160> (https://doi.org/10.14710/ik.ijms.28.2.148-160)



## Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts

[Rozirwan Rozirwan \(https://scholar.google.com/scholar?q=Rozirwan+Rozirwan\)](https://scholar.google.com/scholar?q=Rozirwan+Rozirwan)<sup>1</sup>✉  
([javascript:openRTWindow\('https://ejournal.undip.ac.id/index.php/ijms/rt/emailAuthor/51137/0'\)](https://ejournal.undip.ac.id/index.php/ijms/rt/emailAuthor/51137/0));<sup>1</sup>  
(<https://orcid.org/0000-0001-8415-3343>), [Muhtadi Muhtadi \(https://scholar.google.com/scholar?q=Muhthadi+Muhtadi\)](https://scholar.google.com/scholar?q=Muhthadi+Muhtadi)<sup>2</sup>,  
[Tengku Zia Ulqodry \(https://scholar.google.com/scholar?q=Tengku+Zia+Ulqodry\)](https://scholar.google.com/scholar?q=Tengku+Zia+Ulqodry)<sup>1</sup>  
(<https://orcid.org/0000-0002-0038-0811>), [Redho Yoga Nugroho \(https://scholar.google.com/scholar?q=Redho+Yoga+Nugroho\)](https://scholar.google.com/scholar?q=Redho+Yoga+Nugroho)<sup>2</sup>  
(<https://orcid.org/0000-0002-7945-4982>), [Nadila Nur Khotimah \(https://scholar.google.com/scholar?q=Nadila+Nur+Khotimah\)](https://scholar.google.com/scholar?q=Nadila+Nur+Khotimah)<sup>2</sup>, [Fauziyah Fauziyah \(https://scholar.google.com/scholar?q=Fauziyah+Fauziyah\)](https://scholar.google.com/scholar?q=Fauziyah+Fauziyah)<sup>1</sup>, [Wike Ayu Eka Putri \(https://scholar.google.com/scholar?q=Wike+Ayu+Eka+Putri\)](https://scholar.google.com/scholar?q=Wike+Ayu+Eka+Putri)<sup>1</sup>  
(<https://orcid.org/0000-0002-1456-3088>), [Riris Aryawati \(https://scholar.google.com/scholar?q=Riris+Aryawati\)](https://scholar.google.com/scholar?q=Riris+Aryawati)<sup>1</sup>, [Che Abd Rahim Mohamed \(https://scholar.google.com/scholar?q=Che+Abd+Rahim+Mohamed\)](https://scholar.google.com/scholar?q=Che+Abd+Rahim+Mohamed)<sup>3</sup>

<sup>1</sup>Department of Marine Science, Faculty of Mathematics and Natural Sciences, Sriwijaya University, Indonesia

<sup>2</sup>Environmental Management Study Program, Graduate Program, Sriwijaya University, Indonesia

<sup>3</sup>Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Malaysia

Received: 22 Dec 2022; Revised: 27 Feb 2023; Accepted: 24 May 2023; Available online: 1 Jun 2023; Published: 9 Jun 2023.

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**How to cite** (BCREC): Rozirwan, R., Muhtadi, M., Ulqodry, T. Z., Nugroho, R. Y., Khotimah, N. N., Fauziyah, F., Putri, W. A. E., Aryawati, R., Mohamed, C. A. R. (2023). Insecticidal Activity and Phytochemical Profiles of Avicennia marina and Excoecaria agallocha Leaves Extracts. *ILMU KELAUTAN: Indonesian Journal of Marine Sciences*, 28 (2), 148-160 (doi:[10.14710/ik.ijms.28.2.148-160](https://doi.org/10.14710/ik.ijms.28.2.148-160) (<https://doi.org/10.14710/ik.ijms.28.2.148-160>)).

Citation Format: BCREC

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### Abstract

Toxic bioactive compounds can be obtained from various mangrove plants that have the potential to be developed in agriculture as bioinsecticides. The coast of South Sumatra has relatively abundant Avicennia marina and Excoecaria agallocha vegetation. This study was conducted to analyze the bioactivity of insecticides and the phytochemical profiles of mangrove leaves A. marina and E. agallocha was extracted with methanol, ethyl acetate, and n-hexane from the most toxic extract fraction. Samples were obtained from the Barong River in Sembilang National Park, Banyuasin Regency. The insecticidal activity of the samples was carried out on Gryllus bimaculatus and Tenebrio molitor. Furthermore, the phytochemical profile was analyzed using GC-MS. Based on the results of insecticidal activity on G. bimaculatus, the respective LC<sub>50</sub> values of A. marina and E. agallocha extracts for the hexane fraction were 12,562 mg.L<sup>-1</sup> and 15,464 mg.L<sup>-1</sup>, ethyl acetate 9,986 mg.L<sup>-1</sup> and 10,292 mg.L<sup>-1</sup>, methanol 6,454 mg.L<sup>-1</sup> and 6,969 mg.L<sup>-1</sup>. Whereas in T. molitor, the LC<sub>50</sub> values for the hexane fraction were 10,682 mg.L<sup>-1</sup> and 11,070 mg.L<sup>-1</sup>, ethyl acetate 9,065 mg.L<sup>-1</sup> and 9,269 mg.L<sup>-1</sup>, methanol 4,799 mg.L<sup>-1</sup>, and 5,408 mg.L<sup>-1</sup>. The results of GC-MS analysis on the methanol extract of A. marina leaves which contained phytochemical compounds such as alcohol, lauric acid, myristic, linoleic, elaidate, stearate, endogenous, olead, phthalic ester, and siloxane. Based on the insecticide toxicity category, the insecticidal activity of both A. marina and E. agallocha leaves extracts were low and non-toxic. Further research is needed regarding variations in anti-insecticide of mangrove extract measurements in the future studies.

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