

# NUSANTARA BIOSCIENCE

ISEA JOURNAL OF BIOLOGICAL SCIENCES

| Nusantara Biosci | vol. 8 | no. 2 | pp. 135-320 | November 2016 |  
| ISSN 2087-3948 | E-ISSN 2087-3956 |

*Paracheirodan axelrodi* photo by Tai Lung Aik



**EDITORIAL BOARD:**

Editor-in-Chief, **Sugiyarto**, Sebelas Maret University Surakarta, Indonesia (sugiyarto\_ys@yahoo.com)

**Editorial Advisory Boards:**

Agricultural Sciences, **Muhammad Sarjan**, Mataram University, Mataram, Indonesia (janjan62@gmail.com)  
 Agricultural Sciences, **Dragan Znidarcic**, University of Ljubljana, Slovenia, EU (dragan.znidarcic@bf.uni-lj.si)  
 Animal Sciences, **Freddy Pattiselanno**, State University of Papua, Manokwari, Indonesia (pattiselannofreddy@yahoo.com)  
 Biochemistry and Pharmacology, **Mahendra K. Rai**, SGB Amravati University, Amravati, India (pmkrai@hotmail.com)  
 Biochemistry, **Vinod K. Sangwan**, Eternal University, Baru Sahib (Sirmour), India (sangwan.vinod@yahoo.com)  
 Bioinformatics and Computational Biology, **Guojun Li**, University of Georgia, Athens, USA (guojunsdu@gmail.com)  
 Biomedical Sciences, **Afiono Agung Prasetyo**, Sebelas Maret University, Surakarta, Indonesia (afieagp@yahoo.com)  
 Biomedical Sciences, **Hui Yang**, Guangzhou Medical University, Guangzhou, China (yanghui030454@gmail.com)  
 Bioremediation, **Surajit Das**, National Institute of Technology, Rourkela, India (surajit@nitrrkl.ac.in)  
 Ecology and Environmental Science, **Cecep Kusmana**, Bogor Agricultural University, Bogor, Indonesia (ckusmana@ymail.com)  
 Ethnobiology, **Luchman Hakim**, University of Brawijaya, Malang, Indonesia (lufehakim@yahoo.com)  
 Forestry, **Rajesh Kumar**, Rain Forest Research Institute, Assam, India (rajeshicfre@gmail.com)  
 Genetics and Evolutionary Biology, **Sutarno**, Sebelas Maret University, Surakarta, Indonesia (nnsutarno@yahoo.com)  
 Human Sciences, **Yi Li**, Texas A&M University-Kingsville, Kingsville, USA (yi.li@tamuk.edu)  
 Hydrobiology, **Gadis S. Handayani**, Research Center for Limnology, Bogor, Indonesia (gadis@limnologi.lipi.go.id)  
 Medicinal and Aromatic Plants, **Khalid A.K. Ahmed**, National Research Centre, Cairo, Egypt (ahmed490@gmail.com)  
 Marine Science, **Mohammed S.A. Ammar**, National Institute of Oceanography, Suez, Egypt (shokry\_1@yahoo.com)  
 Micology, **Rajesh K. Gupta**, Biologics Quality & Regulatory Consultants, LLC, North Potomac, USA (guptarus@yahoo.com)  
 Microbiology, **Kateryna Kon**, Kharkiv National Medical University, Kharkiv, Ukraine (katerynakon@gmail.com)  
 Microbiology, **Román Ramírez**, Universidad Pedagógica y Tecnológica de Colombia, Tunja, Colombia (royer94@gmail.com)  
 Molecular Communication and Nanonetworks, **Baris Atakan**, Izmir Institute of Technology, zmir, Türkiye  
 (barisatakan@iyte.edu.tr)  
 Parasitology (Immuno-parasitology), **Hossein Nahrevanian**, Pasteur Institute of Iran, Tehran, Iran (mobicghn@gmail.com)  
 Plant Breeding and Biotechnology, **Danial Kahrizi**, Razi University, Kermanshah, Iran (dkahrizi@yahoo.com)  
 Plant Physiology, **Qingmei Guan**, University of Maryland, College Park, Maryland, USA (qguan@umd.edu)  
 Plant Physiology, **Xiuyun Zhao**, Huazhong Agricultural University, Wuhan, China (xiuyunzh@yahoo.com.cn)  
 Plant Science, **Muhammad M. Aslam**, Kohat University of Science & Technology, Kohat, Pakistan (mudasar\_kust@yahoo.com)  
 Plant Science, **Pudji Widodo**, General Soedirman University, Purwokerto, Indonesia (pudjiwi@yahoo.com)  
 Toxicology, **Shaukat Ali**, University of Azad Jammu and Kashmir, Muzaffarabad, Pakistan (shaukatali134@yahoo.com)

**Management Boards:**

Managing Editor, **Ahmad D. Setyawan**, Sebelas Maret University, Surakarta, Indonesia (unsjournals@gmail.com)  
 Associated Editor (English Editor), **Wiryono**, University of Bengkulu, Indonesia (wiryonogood@yahoo.com)  
 Associated Editor (English Editor), **Suranto**, Sebelas Maret University, Surakarta, Indonesia (surantoak@yahoo.com)  
 Technical Editor, **Ari Pitoyo**, Sebelas Maret University, Surakarta, Indonesia (aripitoyo@yahoo.co.id)  
 Business Manager, **A. Widiastuti**, Development Agency for Seed Quality Testing of Food and Horticulture Crops, Depok, Indonesia (nusbiosci@gmail.com)

**PUBLISHER:** Society for Indonesian Biodiversity

**CO-PUBLISHER:** School of Graduates, Sebelas Maret University, Surakarta

**FIRST PUBLISHED:** 2009

**ADDRESS:**

Bioscience Program, School of Graduates, Sebelas Maret University  
 Jl. Ir. Sutami 36A Surakarta 57126, Indonesia. Tel. & Fax.: +62-271-663375, email: nusbiosci@gmail.com

**ONLINE:**

biosains.mipa.uns.ac.id/nusbioscience



Society for Indonesia  
 Biodiversity



Sebelas Maret  
 University Surakarta

|   |         |
|---|---------|
| Antioxidant and toxicity properties of anthocyanin extracted from red flower of four tropical shrubs<br>HARLINDA KUSPRADINI, ANINDYA MARSABELLA ROSIARTO, AGMI SINTA PUTRI,<br>IRAWAN WIJAYA KUSUMA                         | 135-140 |
| Short Communication: Qualitative determination of secondary metabolic compounds and macro-nutrients some botanical pesticide plants of East Kalimantan, Indonesia<br>INCE RADEN, SUYADI, THAMRIN                            | 141-144 |
| Short Communication: Chemical composition and antioxidant activity of essential oil from <i>Salvia hypoleuca</i> at different growth stages<br>KIANI-DEHKIAN HABIB, BARZIN GITI, MAZOOJI ALI                                | 145-149 |
| Effect of growing media on seed germination and seedling growth of <i>Aganope heptaphylla</i> (Leguminosae)<br>R. SUBEKTI PURWANTORO  | 150-154 |
| Relationship between insect herbivory and environmental variables in forests of northern Iran<br>GOODARZ HAJIZADEH, HAMID JALILVAND, MOHAMMAD REZA KAVOSI, HASSAN<br>BARIMANI VARANDI                                       | 155-160 |
| The difference growth and development of armyworm ( <i>Spodoptera litura</i> ) on five host plants<br>MARIDA SANTI YUDHA IKA BAYU, AYDA KRISNAWATI  | 161-168 |
| Short Communication: Fishing inside Qeshm Island's MPA, A tortuous approach<br>VAHID CHAMANARA, EHSAN KAMRANI, MOSTAFA ZAHIRINIA, KATHLEEN SCHWERDTNER<br>MÁÑEZ   | 169-173 |
| Short Communication: New record of <i>Linum austriacum</i> var. <i>album</i> from Iran<br>SEYED MEHDI TALEBI, MASOUD SHEIDAI, MITRA NOORI   | 174-179 |
| Flowering and seed production of sandalwood ( <i>Santalum album</i> ; Santalaceae) along environmental gradients in Gunung Sewu Geopark, Indonesia<br>YENI W.N. RATNANINGRUM, ENY FARIDAH, SAPTO INDRIOKO, ATUS SYAHBUDIN   | 180-191 |
| Nephroprotective potential of <i>Pistacia chinensis</i> bark extract against induced toxicity in rats<br>SAADIA SATTAR, MUHAMMAD RASHID KHAN, NASEER ALI SHAH, FARAH NOUREEN,<br>KIRAN NAZ                                  | 192-200 |
| Effects of water table level on soil CO <sub>2</sub> respiration in West Kalimantan forested and bare peatland: An experimental stage<br>DWI ASTIANI, BURHANUDDIN, MUHAMMAD TAHERDJADEH, LISA M. CURRAN                     | 201-206 |
| Comparative influence of salinity and temperature on cassava flour product by <i>Lactobacillus plantarum</i> and <i>Lactobacillus acidophilus</i> during single culture fermentation<br>ANDRI FREDIANSYAH, MUHAMAD KURNIADI | 207-214 |
| Influence of preharvest nano calcium applications on postharvest of sweet pepper ( <i>Capsicum annum</i> )<br>FARIBA AMINI, LADAN BAYAT, SHIMA HOSSEINKHANI   | 215-220 |

|   |         |
|---|---------|
| Short Communication: Screening the potency of Zingiberaceae leaves as antioxidant and antiaging agent<br>UMMI ZAHRA, YUNI KARTIKA, IRMANIDA BATUBARA , LATIFAH K DARUSMAN,<br>AKHIRUDDIN MADDU  | 221-225 |
| Crude extracts of two different leaf plant species and their responses against subterranean termite <i>Coptotermes formosanus</i><br>YULIATI INDRAYANI, MUSRIZAL MUIN, TSUYOSHI YOSHIMURA   | 226-231 |
| <i>In silico</i> and <i>in vivo</i> wound healing studies of ursolic acid isolated from <i>Clematis gouriana</i> against GSK-3 beta<br>H. RAJA NAIKA, S. BHAVANA, JAIME A. TEIXEIRA DA SILVA, K. LINGARAJU,<br>VIVEK CHANDRA MOHAN, V. KRISHNA            | 232-244 |
| Characterization of phenotypic diversity of a medicinal plant <i>Lunasia amara</i><br>RIA CAHYANINGSIH  | 245-251 |
| Antimicrobial potential of <i>Carica papaya</i> , <i>Ipomoea aquatica</i> , <i>Alpinia galanga</i> and <i>Piper betle</i> against the aquatic microbials<br>GINA SAPTIANI, ESTI HANDAYANI HARDI, CATUR AGUS PEBRIANTO, AGUSTINA, FIKRI<br>ARDHANI         | 252-257 |
| Handling and propagation of <i>Dendrobium</i> Iriana Jokowi in Bogor Botanic Gardens, Indonesia<br>EKA MARTHA DELLA RAHAYU  | 258-263 |
| Short Communication: Preservation effect of Javanese turmeric and red ginger essential oils on coated frozen patin fillets<br>ROHULA UTAMI, KAWIJI, DANAR PRASEPTIANGGA, GODRAS JATI MANUHARA, LIA UMI<br>KHASANAH, NENSI ANGGRAINI, FENY MARGITA LESTARI | 264-267 |
| Screening and characterization of amylase enzyme in sweet orange ( <i>Citrus sinensis</i> ) juice clarification<br>ROHULA UTAMI, ESTI WIDOWATI, ACCESSTIA CHRISTY   | 268-272 |
| Effect of phosphorus, organic and biological fertilizer on yield of mungbean ( <i>Vigna radiata</i> ) under two cropping patterns<br>SURYANTINI   | 273-277 |
| Characterization of cassava starch-based edible film enriched with lemongrass oil ( <i>Cymbopogon citratus</i> )<br>RIANI RESIANINGRUM, WINDI ATMAKA, LIA UMI KHASANAH, KAWIJI, ROHULA UTAMI,<br>DANAR PRASEPTIANGGA                                      | 278-282 |
| The effect of types and concentrations of auxins on callus induction of <i>Centella asiatica</i><br>SUCI RAHAYU, IKA ROOSTIKA, NURLIANI BERMAWIE  | 283-287 |
| The estimation of emission from the gateways to Surakarta City, Indonesia using the software of Mobilev 3.0 as the basis for an action plan of emission control<br>SUNARTO, WIRYANTO, WIDHI HIMAWAN   | 288-296 |
| Panelist acceptance level on milk chocolate bar with cinnamon ( <i>Cinnamomum burmannii</i> ) powder addition<br>INTAN NISA RASULUNTARI, DIMAS RAHADIAN AJI MUHAMMAD, DANAR PRASEPTIANGGA   | 297-300 |
| Effect of cinnamon essential oils addition in the sensory attributes of dark chocolate<br>MUHAMMAD ISA DWIJATMOKO, DANAR PRASEPTIANGGA,<br>DIMAS RAHADIAN AJI MUHAMMAD  | 301-305 |

|   |         |
|---|---------|
| Evaluation of antibacterial and antioxidant activity of extracts of endophytic fungi isolated from Indonesian Zingiberaceous plants<br>PRAPTIWI, KARTIKA DIAH PALUPI, AHMAD FATHONI, DEWI WULANSARI,<br>MUHAMMAD ILYAS, ANDRIA AGUSTA | 306-311 |
| Short Communication: Larvicidal and antifeedant activities of <i>Kalanchoe daigremontiana</i> against <i>Plutella xylostella</i> larvae<br>DEWI HIDAYATI, YUDI DARMANTO, TUTIK NURHIDAYATI, NURLITA ABDULGANI                         | 312-315 |
| Proliferation of embryogenic callus of Satoimo taro ( <i>Colocasia esculenta</i> var. <i>antiquorum</i> ) in culture media with various level of sucrose and gelling agent<br>HANI FITRIANI, PRAMESTI DWI ARYANINGRUM, N. SRI HARTATI | 316-320 |

# Guidance for Authors

**Aims and Scope** *Nusantara Bioscience* (Nusantara Biosci) encourages submission of manuscripts dealing with all aspects of biological sciences that emphasize issues germane to biological and nature conservation, including agriculture and forestry, animal science, biochemistry and pharmacology, biomedical science, ecology and environmental science, ethnobiology, genetics and evolutionary biology, marine and freshwater biology, microbiology, molecular biology, physiology, and plant science.

**Article types** The journal seeks original full-length research papers, short research papers (short communication), reviews, monograph and letters to the editor about material previously published; especially for the research conducted in the Islands of the Southeast Asian region or Nusantara, but also from around the world.

**Submission** The journal only accepts online submission, through e-mail to the editor at [unsjournals@gmail.com](mailto:unsjournals@gmail.com). The manuscript must be accompanied with a cover letter containing the article title, the first name and last name of all the authors, a paragraph describing the claimed novelty of the findings versus current knowledge, and a list of five suggested international reviewers (title, name, postage address, email address). Reviewers must not be subject to a conflict of interest involving the author(s) or manuscript(s). The editor is not obligated to use any reviewer suggested by the author(s).

**Acceptance** The acceptance of a paper implies that it has been reviewed and recommended by at least two reviewers, one of whom is usually from the Editorial Advisory Board. Authors will generally be notified of acceptance, rejection, or need for revision within 1 to 2 months of receipt. Manuscript is rejected, if the content is not in line with the journal scope, does not meet the ethical standards (i.e. false authorship, plagiarism, duplicate publication, fabrication of data and citation manipulation), does not meet the required quality, written in inappropriate format, has incorrect grammar, or ignores correspondence in three months. The primary criteria for publication are scientific quality and biological or natural conservation significance. The accepted papers will be published in a chronological order. This journal is published in May and November. However, online publication was done previously.

**Ethics** Author(s) must obedient to the law and/or ethics in treating the object of research and pay attention to the legality of material sources and intellectual property rights. Author(s) needs to adhere to the ethical standards as determined by the Committee on Publication Ethics (COPE).

**Copyright** Submission of a manuscript implies that the submitted work has not been published before (except as part of a thesis or report, or abstract); that it is not under consideration for publication elsewhere; that its publication has been approved by all co-authors. If and when the manuscript is accepted for publication, the author(s) agree to transfer copyright of the accepted manuscript to *Nusantara Bioscience*. Authors shall no longer be allowed to publish manuscript without permission. Authors or others are allowed to multiply article as long as not for commercial purposes. For the new invention, authors are suggested to manage its patent before published.

**Open access** The journal is committed to free-open access that does not charge readers or their institutions for access. Users are entitled to read, download, copy, distribute, print, search, or link to the full texts of articles, as long as not for commercial purposes.

## Preparing the Manuscript

Please make sure before submitting that: The manuscript is proofread several times by the author(s); and is criticized by some colleagues. The language is revised by a professional science editor or a native English speaker. The structure of the manuscript follows the guidelines (sections, references, quality of the figures, etc). Abstract provides a clear view of the content of the paper and attracts potential citers. The number of cited references complies with the limits set by *Nusantara Biosci* (around 20 for research papers). All manuscripts must be written in clear and grammatically correct English (U.S.).

Microsoft Word files are required for all manuscripts. The manuscript should be as short as possible, and no longer than 8000 words (except for review), with the abstract 200 words. For research paper, the manuscript should be arranged in the following sections and appear in order: Title, Abstract, Key words (arranged from A to Z), Running title (heading), Introduction, Materials and Methods, Results and Discussion, Conclusion, Acknowledgements, and References. Scientific language, nomenclature and standard international units should be used. The title page should include: title of the article, full name(s), institution(s) and address(es) of

author(s); the corresponding authors detailed postage and e-mail addresses, and phone and fax numbers.

**References** Author-year citations are required. In the text give the authors name followed by the year of publication and arrange from oldest to newest and from A to Z. In citing an article written by two authors, both of them should be mentioned, however, for three and more authors only the first author is mentioned followed by et al., for example: Saharjo and Nurhayati (2006) or (Boonkerd 2003a, b, c; Sugiyarto 2004; El-Bana and Nijs 2005; Balagadde et al. 2008; Webb et al. 2008). Extent citation as shown with word "cit" should be avoided. Reference to unpublished data and personal communication should not appear in the list but should be cited in the text only (e.g., Rifai MA 2007, personal communication; Setyawan AD 2007, unpublished data). In the reference list, the references should be listed in an alphabetical order. Names of journals should be abbreviated. Always use the standard abbreviation of a journal's name according to the ISSN List of Title Word Abbreviations ([www.issn.org/2-22661-LTWA-online.php](http://www.issn.org/2-22661-LTWA-online.php)). The following examples are for guidance.

### Journal:

Saharjo BH, Nurhayati AD. 2006. Domination and composition structure change at hemic peat natural regeneration following burning; a case study in Pelalawan, Riau Province. *Biodiversitas*7: 154-158.

The usage of "et al." in long author lists will also be accepted:

Smith J, Jones M Jr, Houghton L et al. 1999. Future of health insurance. *N Engl J Med* 965: 325-329

### Article by DOI:

Slifka MK, Whitton JL. 2000. Clinical implications of dysregulated cytokine production. *J Mol Med*. Doi:10.1007/s001090000086

### Book:

Rai MK, Carpinella C. 2006. Naturally occurring bioactive compounds. Elsevier, Amsterdam.

### Book Chapter:

Webb CO, Cannon CH, Davies SJ. 2008. Ecological organization, biogeography, and the phylogenetic structure of rainforest tree communities. In: Carson W, Schnitzer S (eds). *Tropical Forest Community Ecology*. Wiley-Blackwell, New York.

### Abstract:

Assaeed AM. 2007. Seed production and dispersal of *Rhazya stricta*. The 50<sup>th</sup> Annual Symposium of the International Association for Vegetation Science, Swansea, UK, 23-27 July 2007.

### Proceeding:

Alikodra HS. 2000. Biodiversity for development of local autonomous government. In: Setyawan AD, Sutarno (eds). *Toward Mount Lawu National Park; Proceeding of National Seminary and Workshop on Biodiversity Conservation to Protect and Save Germplasm in Java Island*. Sebelas Maret University, Surakarta, 17-20 July 2000. [Indonesian]

### Thesis, Dissertation:

Sugiyarto. 2004. Soil Macro-invertebrates Diversity and Inter-cropping Plants Productivity in Agroforestry System based on Sengon. [Dissertation]. Brawijaya University, Malang. [Indonesian]

### Online document:

Balagadde FK, Song H, Ozaki J, Collins CH, Barnet M, Arnold FH, Quake SR, You L. 2008. A synthetic *Escherichia coli* predator-prey ecosystem. *Mol Syst Biol* 4: 187. [www.molecularsystemsbiology.com](http://www.molecularsystemsbiology.com)

**Tables** should be numbered consecutively and accompanied by a title at the top. **Illustrations** Do not use figures that duplicate matter in tables. Figures can be supplied in digital format, or photographs and drawings, which can be ready for reproduction. Label each figure with figure number consecutively.

**Uncorrected proofs** will be sent to the corresponding author by e-mail as .doc or .rtf (not .docx) files for checking and correcting of typographical errors. To avoid delay in publication, proofs should be returned in 7 days.

**A charge** There is free of charge for members of Society for Indonesian Biodiversity (SIB) and/or non-Indonesian author(s). But, the cost of each manuscript is USD 250 for Indonesian non-SIB members (valid for manuscript submissions starting on January 1, 2016).

**Reprints** The sample journal reprint is only available by special request. Additional copies may be purchased when ordering by sending back the uncorrected proofs by e-mail.

**NOTIFICATION:** All communications are strongly recommended to be undertaken through email.



**Society for  
Indonesian Biodiversity**



**Sebelas Maret University  
Surakarta**

**Published semiannually  
PRINTED IN INDONESIA**

ISSN 2087-3948



9 772087 394198

E-ISSN 2087-3956



9 772087 395195