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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Karya Ilmiah (Artikel) : Larvicidal Activity of Bruceina A against Aedes aegypti and Toxicity on Vero cell
Jumlah Penulis : 4 Orang (**Dwi Sutiningsih**, Mustofa, Tri Baskoro Tunggul Satoto, Edhi Martono)
Status Pengusul : Pertama dan Korespondensi
Identitas Jurnal Ilmiah :

a. Nama Jurnal : Online Journal of Biological Sciences
b. Nomor ISSN : ISSN Print 1608 - 4217
c. Vol, No. Bln, Thn : Vol. 18 No. 03 September 2018
d. Penerbit : Science Publications
e. DOI artikel (jika ada) : 10.3844/ojbsci.2018.323.331
f. Alamat Web Jurnal : https://thescipub.com/journals/ojbs atau artikel di https://thescipub.com/abstract/10.3844/ojbsci.2018.323.331
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OnLine Journal of Biological Sciences Open Access
Volume 18, Issue 3, 2018, Pages 323-331

Larvicidal activity of bruceine a against aedes aegypti and toxicity on vero cells (Article) (Open Access)

Sutiningsih, D.[a], Mustofa[b], Satoto, T.B.T.[c], Martono, E.[d]

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[b]Department of Pharmacology, Faculty of Medicine, Gadjah Mada University, Yogyakarta, Indonesia
[c]Department of Parasitology, Faculty of Medicine, Gadjah Mada University, Semarang, Indonesia

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Abstract

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Vector control is still based on the use of chemical insecticides, which can cause death of nontarget animals, pollution and the emergence of vector resistance. This study aims to assess the larvicidal activity of bruceine A against larvae of Aedes aegypti and its cytotoxic activity against Vero cells. Extraction and isolation of bruceine A from the seeds of Brucea javanica (L.) Merr by method of Subeki. The purity of bruceine A isolate is determined by using a thin layer of chromatography and high performance liquid chromatography. Larvicidal activity of bruceine A on the larvae of A. aegypti from instar III until the beginning of instar IV was measured using a bioassay method. The examination of bruceine A cytotoxicity on Vero cells was performed by Micro-culture Tetrazolium assay (MTT). The results showed that mortality of A. aegypti larvae increased with increasing concentration of bruceine A. Log probit analysis of the larva mortality showed that the lethal concentration 50 and 90 (LC_{50}, LC_{90}) were 0.453±0.022 ppm and 4.962±0.681 ppm for 24 h respectively. The cytotoxic activity of bruceine A in Vero cells is low, with inhibitor concentration 50 (IC_{50}) values of 1251.324±0.162 µg/mL. Bruceine A has larvicidal activity against A. aegypti; therefore, it is a potential natural larvicide with low cytotoxicity. © 2018 Dwi Sutiningsih, Mustofa, Tri Baskoro Tunggul Satoto and Edhi Martono.

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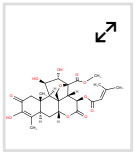
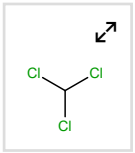

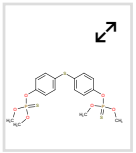

Author keywords

Aedes aegypti | Brucea javanica (l.) merr | Bruceine a | Cytotoxicity | Larvicidal | Vero cells

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Larvicidal Activity of Bruceine A against *Aedes aegypti* and Toxicity on Vero Cells

Dwi Sutiningsih[1], **Mustofa** [2], **Tri Baskoro Tunggul Satoto** [2] **and Edhi Martono**[2]

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DOI: https://doi.org/10.3844/ojbsci.2018.323.331 (https://doi.org/10.3844/ojbsci.2018.323.331)

Submitted On: 16 May 2018 **Published On:** 4 September 2018

How to Cite: Sutiningsih, D., M., Tunggul Satoto , T. B. & Martono, E. (2018). Larvicidal Activity of Bruceine A against *Aedes aegypti* and Toxicity on Vero Cells. *OnLine Journal of Biological Sciences*, *18*(3), 323-331. https://doi.org/10.3844/ojbsci.2018.323.331

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Original Research Paper

Responses of Grain Yield and Nutrient Accumulation to Water and Foliar Fertilizer Management in Upland and Wetland Rice Varieties

[1]Natdanai Juntakad, [2]Sittichai Lordkaew, [1]Sansanee Jamjod and [1,3]Chanakan Prom-u-thai

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Article history
Received: 23-03-2018
Revised: 15-05-2018
Accepted: 24-05-2018

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Abstract: This study evaluated the effects of water and fertilizer managements on grain yield and nutrient accumulation in upland and wetland rice varieties. The two rice varieties representing upland (KH CMU) and wetland (CNT1) ecotypes were grown in different water conditions and fertilizer managements. The interaction between variety and water condition had significantly affected on grain yield and straw dry weight. The water condition and fertilizer management were also affected on grain nutrient concentrations differently between the two varieties. The difference in responses to grain nutrients between the two rice varieties representing their original ecotypes of wetland and lowland is the key factor with respect to the proper management of water and fertilizers in order to maximize in both grain yield and nutrition. This knowledge is useful for the proper management of water and fertilizers for improving grain yield and nutrient accumulation. However, increasing the number of rice varieties in each upland and wetland ecotypes is needed to confirm the responses to water and fertilizer management in the future study.

Keywords: Rice Ecotype, Upland Rice, Wetland Rice, Foliar Fertilization, Aerobic Condition

Introduction

Nitrogen (N), Phosphorus (P) and potassium (K) are the common macronutrient fertilizers used by farmers to improve rice crop production. In Bangladesh, applying of 87 kg N, 20 kg P and 25 kg K ha^{-1} in rice crops increased grain yield from 3.6 t ha^{-1} with no fertilizer application to 7.5 t ha^{-1} due to improving of plant height, number of tillers and panicles per hill and grains per panicle (Islam *et al*., 2011). This has also been observed in China where N, P and K fertilizer application was found to increase grain yield by 10.1, 5.0 and 8.6%, respectively, compared with no fertilizer application (Xu *et al*., 2016). Direct broadcasting of fertilizers in the crop soil is the practice followed by farmers which has effect on the transport and movement of nutrients from the soil solution into plants and effectively improved crop yield (Moraghan and Mascagni, 1991; Comerford, 2005). On the other hand, foliar fertilizer application is an alternative fertilizer application in rice by spraying the fertilizer directly onto the leaf, especially in the case of micronutrients in which the nutrients are diffused through the cuticle, then transported through the cell wall by passive transport and finally move through the plasma membrane by active transport to enter the plant cell (Fageria *et al*., 2009). This technique has been reported as an efficient method as it allows the absorption to occur rapidly into the inner cell layers of the leaf and other reproductive organs (Ahmad and Jabeen, 2005; Ganapathy *et al*., 2008), which consequently results in an increase in both the quality and quantity of production, reduce in the loss of nutrients (Tejada and Gonzalez, 2004) and rapidly bringing a solution to the problem of nutrient deficiency caused by soil fertilizer application due to highly acidic or alkaline condition

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OnLine Journal of Biological Sciences

Investigations

The Influence of Bioorganic Preparations and Mineral Fertilizers to the Productivity and Quality of Beetroot in the Subsurface Irrigation in the South-East of Kazakhstan

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Article history
Received: 31-10-2017
Revised: 09-11-2017
Accepted: 09-01-2018

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Abstract: Vegetables are valuable sources of vitamins, organic acids and mineral salts. In Kazakhstan, the consumption rate of vegetables per person is 120 kg per year, where 8 kg is beetroot. Beetroot cultivated area is 7,000 hectares. The yield is 150,000 tons, and the demand is 144,000 tons. Beetroot is one of the most popular and all year round vegetable that used in food. Despite the high biological potential (40-50 t/ha), the yield of beetroot is low (20-22 t/ha). The main reasons are deterioration of soil fertility and mineral consumption of the crop. Along with the increase in the productivity of beetroot, it is also necessary to improve the quality, especially the ecological purity of the crop. There is carried out experiments on the effect of various bioorganic preparations and mineral fertilizers on the yield, quality and storing quality of beetroots in KazRIPaVG. The goal of the experiment is to increase the yield, quality and environmental cleanliness of the products. Research methods are generally accepted in vegetable growing and agrochemistry. There was found an increase in the productivity of the crop to 10.9-38.4%. Also, there was noted improved quality and conservation of beetroot from many types of bioorganic fertilizers. Mineral fertilizers showed a high effect in subsurface irrigation. In addition, 15.6-46.3% of beetroot was obtained. The highest production (37.6 t/ha) was provided by the fertilizer $N_{150}P_{90}K_{120}$.

Keywords: Beetroot, Bioorganic Preparations, Mineral Fertilizers, Subsurface Irrigation, Ecology, Yield, Quality, Storing Quality

Introduction

Vegetable farming is an important sector of agriculture in Kazakhstan that designed to provide balanced food to the population for the whole season. The soil and climatic conditions of the country allow producing large amount of various types of vegetables and thereby ensuring the domestic market completely. According to statistics in 2016, vegetables were cultivated in the area of 146.2 thousand hectares, and 3.564 million tons were harvested in Kazakhstan. The country supply by vegetables was 210% (Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan).

The sown area of beetroot is about 7 thousand hectares (5%) in Kazakhstan. Moreover, the gross harvest is 150 thousand tons with the demand of 144 thousand tons. Beetroot is the most popular and all year-round used vegetable in the country. Beetroot contains 18-24% of dry substances, 12-17% of sugar, and 13-15 mg of vitamin C. Beetroot is unique in its content of biologically and physiologically active substances, and the caloric content is very high. It contains proteins, fats, fiber, pectins, sugars (sucrose, fructose, and glucose), organic acids (malic, citric, oxalic and folic), vitamins C, B1, B2, P, PP, and minerals (sodium, potassium salts, calcium, iron, phosphorus, iodine, magnesium, cobalt and manganese). There are many substances that can

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