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UDC 639.55

Sari Budi Moria Sembiring and Jhon Harianto Hutapea (Institute for Mariculture Research and Fisheries Extension)

Gonad development of sandfish (*Holothuria scabra*) fed with vitamin E-supplemented diet

Indonesian Aquaculture Journal, 14 (2), 2019, 47-54

The experiment was conducted to evaluate the effect of vitamin E on the gonad development of sandfish, *Holothuria scabra*. Four experimental diets were formulated to contain different levels of vitamin E, i.e. 0, 150, 300, and 450 mg/kg diet. Dry diets were prepared at the same protein level (14%). The experiment was arranged in a completely randomized design with four treatments and three replicates. Before the experiment started, the internal organs of broodstock were removed (evisceration) by injecting KCl 1 N reagent into their body, and the gonads were observed to determine the sex of each broodstock. Mean total length and body weight of broodstock after the internal organ removal were 10.95 ± 0.37 cm and 61.12 ± 2.28 g, respectively. Three broodstock (one male and two females) were allocated into each plastic bucket with a volume of 150 L. Each plastic bucket was equipped with aeration and flow-through water system. Broodstock fed with experimental diet once daily at 3% of total biomass for 90 days. The results showed that vitamin E has significant effects on percentage of gonad maturation stages and gonad somatic index (GSI) ($P < 0.05$). Vitamin E at 300 mg/kg diet was the best for gonad maturation of sandfish broodstock. Furthermore, 55.5% and 11.1% of broodstock fed a diet containing 300 mg vitamin E/kg diet reached gonad maturity stage-III and stage-IV, respectively, with GSI of 12.21%.

KEYWORDS: gonad maturation; sandfish; *Holothuria scabra*; vitamin E

UDC 639.32

Afifah Nasukha, Reagan Septory, Gigih Setia Wibawa, and Karl-Heinz Runte (Institute for Mariculture Research and Fisheries Extension)

Organic enrichment of sediments: a case study at mariculture site, pegametan bay Bali, Indonesia

Indonesian Aquaculture Journal, 14 (2), 2019, 55-62

ABSTRACT

Mariculture industry has been developed progressively in Indonesia, where its impact on the surrounding aquatic environment is inevitable. The particulate wastes produced such as excess food and feces will be discharged from a marine farm and dispersed into the surrounding areas. This process could lead to organic enrichment of the receiving seabed sediment and gradually degrade water quality and disturb local benthic community as well as the aquatic ecosystem of the area. This study focused on determining the level of organic enrichment of sediment underneath four currently-active farms in Pegametan Bay, North Bali, Indonesia. The results showed that high accumulation of organic matters was evident in all sampling farms indicated by a significantly high particulate organic matter (POM) between 75.20 ± 2.57 and $92.97 \pm 0.59\%$, and low redox values between -217.41 ± 2.74 and -343.57 ± 1.48 mV. A visual-based assessment also determined that the sediment had a silt and muddy texture with deep grey to black colorization with noticeable strong H_2S odor. In this case, further investigations and monitoring efforts are needed in the near future to ensure the best management programs for sustainable farming and ecosystem both fish farmers and environmental regulators such as local government.

KEYWORDS: mariculture; organic enrichment; Pegametan Bay; sediment assessment

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Yuliana Salosso (Faculty of Marine and Fisheries, Nusa Cendana University)

The potential of forest honey (*Apis* spp.) from Timor Island as antibacterial against pathogenic bacteria in fish culture

Indonesian Aquaculture Journal, 14 (2), 2019, 63-68

This study aims to assess the potential of forest honey *Apis* spp. from Timor Island as an antibacterial on pathogenic bacteria, *Aeromonas hydrophila* and *Vibrio alginolyticus* in cultured fish. There were six types of honey tested in this study of which active compound, total glucose, pH, and water content of each honey were determined. The chemical contents of the honey were examined for alkaloid using Culvenor-Fitzgerald method, saponin with foam test, terpenoid and steroid with Lieberman-Burchard method, tannin with addition of FeCl₃, and flavonoid addition of HCl and Mg powder. Total glucose was measured using spectrophotometer, water content with gravimetry, and pH with pH-meter. The antibacterial activity test of the honey was done using disc method without dilution. Results showed that all forest honey from Timor Island contained alkaloid, saponin, steroid, and terpenoid, except Kefa honey which did not have steroid and terpenoid. The water content of the honey ranged from 15.70% to 26.65%, total glucose of 71.16% to 80.58%, and pH of 3.84 to 4.06. The forest honey also had antibacterial activity against *A. hydrophila* and *V. alginolyticus* with different inhibition zones.

KEYWORDS: *Aeromonas hydrophila*; antibacterial; honey; *Vibrio alginolyticus*

UDC 639.2.091

Rukisah, Diana Maulianawati, and Jimmy Cahyadi (Department of Aquaculture, Faculty of Fisheries and Marine Science, Borneo University of Tarakan)

In vitro antibacterial efficacy of leaves extract of *Centella asiatica* against *Vibrio harveyi* and *Aeromonas hydrophila*

Indonesian Aquaculture Journal, 14 (2), 2019, 69-74

Disease infection is one of the limiting factors that affect productivity in aquaculture and has caused economic losses. Luminescent vibrios and motile aeromonas septicemia (MAS) are diseases caused by *Vibrio harveyi* and *Aeromonas hydrophila* bacteria, respectively. Certain plants have antimicrobial compounds and can potentially be used to treat the diseases, such as *Centella asiatica*. In the present study, the crude leaves extracts of *C. asiatica* were examined for its antibacterial potential using methanol solvents against *V. harveyi* and *A. hydrophila* bacteria. Different concentrations of 50 mg/mL and 100 mg/mL were checked for its antibacterial activity. The crude extract was also tested for phytochemistry content and LC₅₀ using Brine Shrimp Lethal Assay. The crude extracts of *C. asiatica* showed a remarkable antibacterial activity with inhibition zone of 10.57 mm against *A. hydrophila* and 21.14 mm against *V. harveyi*. The phytochemistry test result showed that *C. asiatica* leaves contain alkaloid, phenol, and tannin compounds. The acute lethal concentration (LC₅₀) of *C. asiatica* after 24 hours exposure to the extract mixture was 254 mg/L. The results confirmed the potential use of *C. asiatica* extracts as a source of antibacterial compounds.

KEYWORDS: antibacterial; *Centella asiatica*; *Vibrio harveyi*; *Aeromonas hydrophila*

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Bambang Setyo Sihananto, Hessa Novita, Christina Wianty, and Angela Mariana Lusiastuti (Mandiangan Freshwater Aquaculture Development Center (MFADC) South Kalimantan)

A case study of lymphocystis virus disease in farmed giant snakehead (*Channa striata*) in Mandiangan, South Kalimantan

Indonesian Aquaculture Journal, 14 (2), 2019, 75-81

Lymphocystis virus has been implicated as the cause of severe infection, mortality, and economic loss in farmed giant snakehead (*Channa striata*) or gabus fish in Mandiangan South Kalimantan. In Kalimantan, the fish is locally known as Haruan fish and considered to have health-related benefits to human due to its high albumin content. This study aimed to determine the LCDV in gabus fish through histopathological and PCR investigation. Infected LCDV fish have a cluster of wart growths in the skin or fin of a walleye. Infected fishes with an average of total length of 15 cm and weight of 150 g were collected from local net cages and earthen ponds. They were transferred into a laboratory, anesthetized, and then subsequently killed by organ dissection. The infected fish tumors were aseptically cut out for histological study and PCR detection. Primer used was forward GII F: 5' TGG GAT TCC AAY GGT CAA TTA-3' with target band of 468 bp (for genotype-III LCDV) and primer reverse R: 5' TTA GAT TAT TGG GCA GCG TT-3' with target band of 250 bp (for genotype-II LCDV) and GIII F: 5' AGG AAA TAA CCG CAG TA GAA TGCA. Lymphocytosis in infected fish showed multifocal to diffuse white, round, firm, papilloma or tumor-like nodules on the skin of the body, fins, eyes, and mouth. The hypertrophied cell was surrounded by a thick smooth hyaline capsule. Stress condition caused by high population density, nutrition deficiencies, decreased dissolved oxygen, suboptimal water quality, and handling may increase the appearance of LCDV symptoms. The result of the present study revealed that histopathology and PCR could be used to diagnose LCDV infection.

KEYWORDS: gabus; South Kalimantan; lymphocystis; histopathology; PCR

UDC 639.31

Ani Widiyati, Adang Saputra, and Eri Setiadi (Research Institute for Freshwater Aquaculture and Fishery Extension) Production performance and blood profile of climbing perch *Anabas testudineus* Bloch cultured in peat pond with different stocking densities

Indonesian Aquaculture Journal, 14 (2), 2019, 83-89

Climbing perch is one of economically-valued local fish in Indonesia, particularly in Borneo, Sumatra, and Java Islands. The fish has the potential to be developed as freshwater aquaculture species. The purpose of this experiment was to evaluate the production performance and blood profile of climbing perch cultured in peat pond with different stocking densities. The research was conducted in Kereng Bangkiray Village, Sebangau District, Palangkaraya City, Central of Borneo. Nine fish ponds sized 5.0 m x 5.0 m x 1.5 m were used. Nets with a mesh size of 1 cm measuring 2.0 m x 1.5 m x 1.0 m was installed in each fish pond for the experiment. The treatment consisted of different stocking densities, namely 15 fish/m², 30 fish/m², and 45 fish/m². Fish with the body weight of 20 ± 1.25 g were used. Fish were cultured for four months. An artificial diet containing 30% protein was given with a feeding rate of 5%. The experiment was designed in a complete randomized design. The result showed that the production performances (i.e. survival, specific growth rate, absolute weight, and biomass) were significantly higher at the densities of 15 and 30 fish/m² than that of 45 fish/m² (P<0.05). Blood profile such as glucose, erythrocyte, leucocyte, and hemoglobin were higher at the density of 45 fish/m² except for hematocrit which was higher at the densities of 30 and 15 fish/m². Water quality parameters such as dissolved oxygen, nitrite, nitrate, and ammonia at the densities of 15 and 30 fish/m² showed better values than that of 45 fish/m² stocking density. To optimize the productivity and maintain the optimum water quality condition, the optimal stocking density for climbing perch culture is suggested at 30 fish/m².

KEYWORDS: *Anabas testudineus*; production performance; blood profile; stocking density; peat pond

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I Nyoman Adiasmara Giri[#], Ketut Sugama^{**}, Alimuddin^{***}, and Anang Hari Kristanto^{****}

^{*}) Research and Development Institute for Mariculture, Gondol

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ABSTRACT (12pt Bold)

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KEYWORDS: Author guidelines; research journal; aquaculture; article template

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Table 1. Response to selection and final mean body weight of the third generation compared to the control population of the African catfish *Clarias gariepinus* at the end of larval rearing, nursery and grow-out phases

| Phases | Periods (days) | Final mean body weight (g) | | Response to selection | |
|----------------|----------------|----------------------------|----------------|-----------------------|----------------|
| | | Third generation | Control | Gram (g) | Percentage (%) |
| Larval rearing | 25 | 0.19 ± 0.10 | 0.19 ± 0.07 | - | - |
| Nursery | 30 | 6.12 ± 2.93 | 5.80 ± 3.50 | - | - |
| Grow-out | 60 | 198.67 ± 82.82 | 165.22 ± 71.09 | 33.45 | 20.24 |

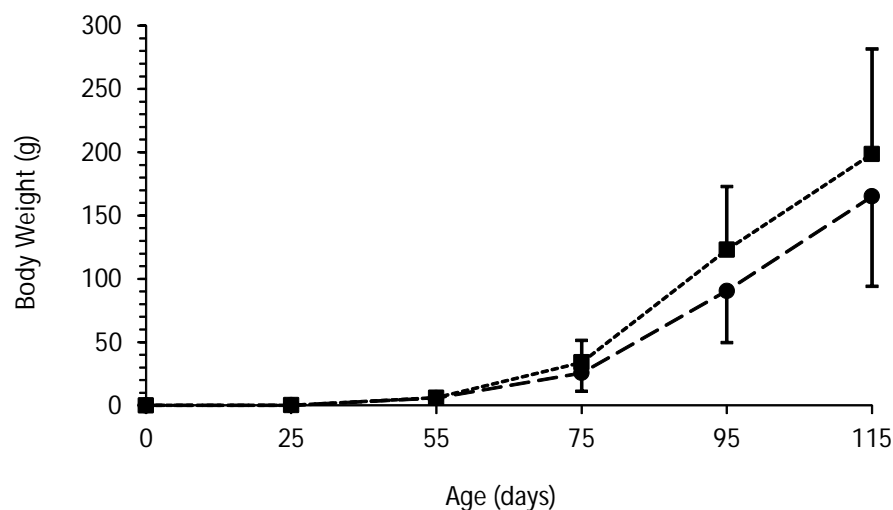


Figure 1. Growth performances based on body weight during 25 days of larval rearing phase, 30 days of nursery phase and 60 days of grow-out phase (based on samplings of 2% populations) of the third generation (■) and control population (●) of the African catfish (*Clarias gariepinus*) genetic improvement program held at Research Institute for Fish Breeding, Sukamandi. Vertical lines represent its each standard deviation

ACKNOWLEDGEMENTS: thanks mainly devoted to research funders. Acknowledgements can also be delivered to the parties that support the implementation of the research and writing of the manuscript.

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10. Acknowledgements

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