ARTICLES


The Involvement of Pigment-Protein Fraction from Microalga
*Nannochloropsis oculata* in Expression of Heat Shock Protein 70
with Nervous Necrosis Viral Infection on Grouper

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**PPF versus NNV**: Pigments from microalga *Nannochloropsis oculata* containing protein (PPF) show inhibition of fish infected by Nervous Necrosis Viral (NNV) in brain tissue and blood cell from the expression of HSP70. These results cannot be observed in fishes with treatments as control, mixture with PPF and induction with NNV. Such function suggests the application of PPF as an antiviral to control NNV diseases in *C. altivelis* culture.

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Seasonal variation of phycoerythrin chromophores of *Synechococcus* spp.
in the East Sea/Japan Sea

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**Pigments of Different Seasons**: Phycoerythrin pigments as phycourobilin (PUB) and phycoerythrobilin (PEB) from *Synechococcus* spp. in East Sea/Japan Sea were affected by the seasonal variation on their distribution. Summer and winter gave excitation ratio of PUB to PEB ratio more than one while autumn and spring gave excitation ratio less than 1. Seasonal pattern of the pigments depends on the variability of environmental factors such as light intensity and salinity.

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The Antioxidant Activity of Carotenoid Pigments in the Bacterial Symbionts of Seagrass *Syringodium isoetifolium*

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Carotenoid from Seagrass as Antioxidant: 12 type of bacterial symbionts from seagrass *Syringodium isoetifolium* was isolated using dispersive media Zobel 2116E. Compared to other bacterial, the extracted carotenoid pigments from isolate 7A shows free radical DPPH reduction activity up to 40% with 100% level of kindship.

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The Effect of Yellow Natural Color from Turmeric on Physical And Sensory Properties of Arenga Starch-Taro (*Colocasia esculenta* L.) Flour Noodle

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Noodle with Natural Pigment; Yellow natural color from turmeric as coloring extract affects the physical and sensory characteristics of arenga starch – taro flour noodles. The addition of turmeric extract decreases the physical properties such as break compression, elongation, and tensile strength of arenga starch-taro flour noodle. The most preferred noodles in the sensory analysis shows a noodle from arenga starch-taro flour with addition of 0.12 g turmeric/mL of water.

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The Effectiveness Test of Application Anthocyanin’s Extract in Fruit Jam from Several Local Biodiversities

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Effectiveness of Anthocyanine in Jam: Quality of papaya jam shows increasing when anthocyanine’s extract from several local biodiversities was used at 60% sugar content. Canna flower as the source of the anthocyanine pigments provides the best effectiveness with lower water and pectin contents, vitamin C, reducing sugar, pH value, brightness and redness levels as well as testing rating.

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Effects of pH and Storage Time on the Stability of Papaya and Carrot Extracts

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Neutral and Alkaline: Chroma values and stability of papaya and carrot extracts consisting of natural pigments were greatly influenced by pH, where carrot extract showed better values. The high chroma values were observed when the buffer pH was neutral or alkaline. Moreover, the papaya and the carrot extracts were not stable under acidic condition, but more stable under neutral and alkaline conditions.

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