

# In vitro efficacy of encapsulated neem seed extract against armyworm *Spodoptera litura* *by Erika Joeniarti*

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Periphyton referred to as benthic algae with reference to all the microflora associated with the substrate. Periphyton can cause corrosion of the metal either directly by producing free oxygen from photosynthesis process, or indirectly by providing various nutrient compounds and micro-environments for the bacteria that cause corrosion due to mucus produced at the time of colonizing the substrate. Biofilms formed on the surface of metals in natural waters are generally dominated by diatoms belonging to the periphyton group. Thus, the presence of periphyton, along with corrosion-causing bacteria, was also thought to accelerate the process of corrosion of metals in water. In order to analyze biodiversity and the dynamics of the periphyton community in the process of biofilm formation, this research was carried out by immersing carbon steel 37 (CS37) specimens in water flow in Saguling Hydro Power for four months and sampled periodically. On the surface of CS37, there were 20 types of periphyton that were dominated by Stanieria sp. and Phormidium sp. The existence of both types of periphyton can be due to the high dominance and abundance of both species in the aquatic environment around the observation site. The abundance of Stanieria sp. in both the Saguling hydroelectric waters and on CS37 surfaces can be caused by the abundance of available organic nutrients. In addition to microflora, microfauna was also found in the biofilms. The number of types of microfauna were 20 types and dominated by *Centropixys* sp., *Philodina* sp., and *Vorticella* sp. *Centropixys* sp. was found in aquatic environments with eutrophic tropical status. Shannon diversity index of periphyton on CS37 ranged from 0.01 to 0.33 and showed a low species diversity, while the index of microfauna diversity ranged between 0.29 and 1.68 and showed low to medium species diversity. The results of FTIR analysis on biofilms showed the standard characteristics of a biofilm that indicated the presence of hydroxylic acid functional group as one of the cluster-forming carbohydrates and protein  $\beta$ -sheet which was a constituent group of the polypeptide. In the process of biofilm formation at Saguling hydropower, sulfate reduced bacteria as anaerobic bacteria and the main bacterial group causing microbial corrosion was detected on CS37 surface on the second day. This indicated that the biofilms with the oxygen gradient in it have formed.

Biofilm, carbon steel 37, community dynamics, periphyton, Saguling hydropower

## CO-14

### In vitro efficacy of encapsulated neem seed extract against armyworm *Spodoptera litura*

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A new technology to improve quality and performance of botanical insecticide is needed urgently. Nanoencapsulation

is a method to coat plants active substances by the polymer wall layer so that it produces nanoparticles. To examine effectiveness of this technique, we evaluated efficacy of encapsulated neem seed extract towards antifeedant activity and larvae mortality of armyworm *Spodoptera litura* in a laboratory. The research was conducted in several steps, i.e., rearing armyworm in laboratory, extraction of neem seed, encapsulation of neem seed extract, and efficacy test the encapsulated neem seed extract against the mortality of armyworm in laboratory. The result showed that the encapsulated neem seed extract 30% exhibited the highest antifeedant activity to *S. litura*., while 10% concentration of this botanical insecticide inflicted 64.75% larvae mortality.

Antifeedant, mortality, nanoparticles, neem seed, *Spodoptera litura*

## CP-01

### Selected fruit and seed morphological diversity of Gede-Pangrango Mountain Plants, West Java, Indonesia

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Twenty-three seed species were collected during a trip to the Gede Pangrango National Park, West Java, Indonesia on 22-30 May 2016. These species belong to 13 families whereas the most collected are species of Rubiaceae and Araceae. Three sites were visited, i.e., Cibodas, Pancawati and Selabintana Resort and transect sampling was applied. This expedition is part of the Center of Plant Conservation's Seed Bank Project to complete its collections. Further expeditions and research will be conducted according to Millennium Seed Bank Kew.

Collection, fruit, seed, seed bank, plant conservation

## CP-02

### Suitability coral reef condition for snorkelling at Belitung Island Waters, Bangka Belitung Islands, Indonesia

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Coral reefs condition had been studied in small islands, surrounding Belitung Island's waters, Indonesia, i.e., Lengkuas Island, Burung Island, and Kepayang Island. This study aims to analyze coral condition at those islands,

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