



**PES-33**

**Aphicidal Activity of Biosurfactant isolated from *Bacillus* strain against Green Peach Aphid (*Myzus persicae*)**

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Biosurfactant-producing microorganism is a potential for control of plant pathogens and pest insects alternative to synthetic pesticides in agriculture. The aim of this study is to isolate a microorganism exhibiting aphicidal activity against green peach aphid. A bacterium named MS-1 was isolated from Chojang and incubated in LB for 4 days. To determine aphicidal activity, topical assay was performed. The insecticidal mortality was calculated by the Abbot's formula. It utilized different glucose, fructose, sucrose and sodium acetate as a carbon source. The surface tension was measured by the ring method using a tensiometer. A bacterial strain MS-1 was identified as *Bacillus* strain MS-1 based on 16s-rRNA sequence analysis. The MS-1 produced biosurfactant which reduced surface tension below 30.51 dyn/cm in acidic precipitate. The MS-1 biosurfactant exhibited more than 90% of mortality at 1,000mg/L. The bioassay activity was stable at high temperature, high pressure and neutral pH. To identify the aphicidal active compounds, further studies on structural analysis is required.

**PES-34**

**Aphicidal Activity of Biosurfactant Isolated from *Bacillus* sp. G1 against Green Peach Aphid (*Myzus persicae*)**

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A microorganism identified as *Bacillus* sp. G1 based on 16S rRNA sequence analysis was isolated from a fermented food. It was proved that *Bacillus* sp. G1 produces a surface-active metabolite like a biosurfactant by the drop-collapsing test of the supernatants of G1. Cell-free medium of *Bacillus* sp. G1 incubated in LB exhibited 32.1~33.3 dyn/cm of surface tension values and aphid mortality more than 76%. The precipitates obtained from the supernatants of G1 at pH 2 were extracted with ethyl acetate. The extracts showed 80% aphid mortality at 100 mg/L. These results indicate the existence of a certain relation between the biosurfactant and aphicidal activity. The purification to investigate the aphicidal metabolite is in progress.

**PES-35**

**An Assessment on Phosphate Solubilization by *Burkholderia anthina* R-4183 under Different pH Regimes**

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A phosphate solubilizing bacteria *Burkholderia anthina* R-4183, isolated from green house soils in Chungchugnam-do province, Gongju-Gun area in South Korea was employed in assessing phosphate solubilizing activities and organic acid production *in vitro*. Three sources of insoluble phosphate (i.e. Ca phosphate, Fe phosphate and Al phosphate) were used with three pH regimes (i.e. 7, 8 and 9). The highest Ca phosphate solubilization (667 µg/ml) was recorded at pH 7 followed by pH 8 and 9 (343 and 319 µgml<sup>-1</sup> respectively). However, the highest Fe phosphate solubilization (113.2 µg/ml) and the highest Al phosphate solubilization (30.9 µg/ml) were recorded at pH 8 and pH 9 respectively. In addition to the poor AlPO<sub>4</sub> solubilizing ability, the strain was found to produce comparatively lower amount of organic acids also with the presence of Al phosphate. The strain produced the highest amount of organic acids with the presence of Ca phosphate. Gluconic acid followed by oxalic acid and citric acid were among the organic acids produced by the strain irrespectively the source of inorganic phosphate. It was noticed throughout the incubation that phosphate solubilization was accompanied by a distinct pH decrease. Therefore, it could be concluded that acidification of the culture medium associated with the production of organic acids play a significant role in the process of inorganic phosphate solubilization. (SRAA)

**PES-36**

**The Effects of Carbon and Nitrogen Source on the Aphicidal Activity of *Pseudomonas* EP-3**

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According to the our previous study, the metabolite, Rhamnolipids, produced by oil-degrading bacterium *Pseudomonas* sp. EP-3 (EP-3) showed high aphicidal activity against Green peach aphids (*Myzus persicae*). This study was performed in order to test aphicidal activities of EP-3 subjected to various carbon to nitrogen ratio (C/N) as major nutrients. Carbon sources used in the experiment were glucose, fructose sodium-acetate, sucrose, glutamate, soy bean oil, canola oil, olive oil, and soybean oil waste. Nitrogen sources used in the experiment were sodium nitrate, ammonium sulfate, ammonium nitrate. As a result, 100% of aphicidal activity was observed under specific carbon sources such as glucose (2%), fructose (2%), sodium-acetate(2%), and plant oil (0.2%). glucose (2%) and soybean oil (0.2%) were selected as best carbon sources and sodium nitrate were selected as best nitrogen sources. The optimum C/N ratio for the highest mortality was determined to be 50:1