Toxicological Effect of the Bioactive Compounds from Giant Taro (Alocasia macorrhizos) against Coconut Scale Insects (Aspidiotus destructor)

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Coconut Scale Insects (CSI), Aspidiotus destructor severely affected coconut plantations in the Philippines causing a drop in production since 2013. This study aimed to find an alternative organic method of controlling the pest using the Giant Taro (Alocasia macorrhizos). Five kilograms each of Taro trunk and leaves were washed and cut. 150 grams of each of the air-dried Taro trunk and leaves were separately soaked in 300 mL coconut oil, water, and methanol while 150grams each of fresh Taro trunks and leaves were separately soaked in 300mL coconut oil and water. One ml of the oil-based, water-based, and methanolic leaf and trunk extracts at 0.5 g/ml solution was directly sprayed (DS) to 100 CSI, and to a variable number of CSI in the indirect systemic mode (ISM). Sample counting of the CSI was done after 24 hours for DS and, after 24 and 48 hours for ISM. Average Percentage Mortality (APM) values were compared. For further toxicity test, roots of young coconuts were tied to plastic bags each containing 60 ml of methanolic leaf and trunk, or water-based fresh leaf, or air-dried trunk, extracts for 6 days. DS of oil-based, fresh and air-dried leaf and trunk extracts achieved 100% mortality after 24 hours. In the ISM, oil-based fresh leaf and the oil-based air-dried trunk extracts had the highest (99%) and lowest (69%) APM, respectively, after 48 hours. Root absorption shows healthy young coconuts after 6 days, thus, the Giant Taro organic extracts can kill A. destructor without damaging the coconuts.

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