Title The study of biosurfactant as a cleaning agent for insecticide residue in leafy vegetable

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Abstract

Introduction: Pesticides are used as the main tool for agricultural pest control. Many pesticides are, however, toxic substances and persistent in character. Concern over the pesticide residues in fruits and vegetables have led to the development of many clean up and analysis methods. **Materials and methods:** Biosurfactant was used in this study to explore the possible potential for cleaning up cypermethrin residue. Lettuce was choose as a representative for leafy veggie. Amounts of biosurfactant and the contact times needed to reduce cypermethrin residue in lettuce to below maximum residue limit of 2 ppm to make it safe for consumers were determined. Salt, vinegar and potassium permanganate are also tested for comparing the Cypermethrin neutralizing effect on lettuce with biosurfactant. A simple method to determine cypermethrin residue is developed base on Ninhydrin test which is the reaction of Ninhydrin reagent with free Nitrogen to form a color product which can be detected by spectrophotometer. **Results and discussion:** With the initial pesticide concentration of 100 ppm the amount of biosurfactant that need to be used is 10 ppm of biosurfactant for 25 minutes, 15 ppm of biosurfactant for 15 minutes and 20 ppm of biosurfactant for 5 minutes. With the initial pesticide concentration of 10 ppm the amount of biosurfactant that need to be used is 2 ppm for 3 minutes, 3 ppm for 3 minutes, and 4 ppm for 1 minutes minute. Adding $KMNO_4$ together with bio-surfactant will cause the synergistic effect that will further enhanced the efficiency of this cleaning method. From this study we concluded that bio-surfactant can be sued as an effective agent to clean up pesticide similar to the group of cypermethrin on leafy vegetable.