

CHAPTER 6

OVERALL CONCLUSION

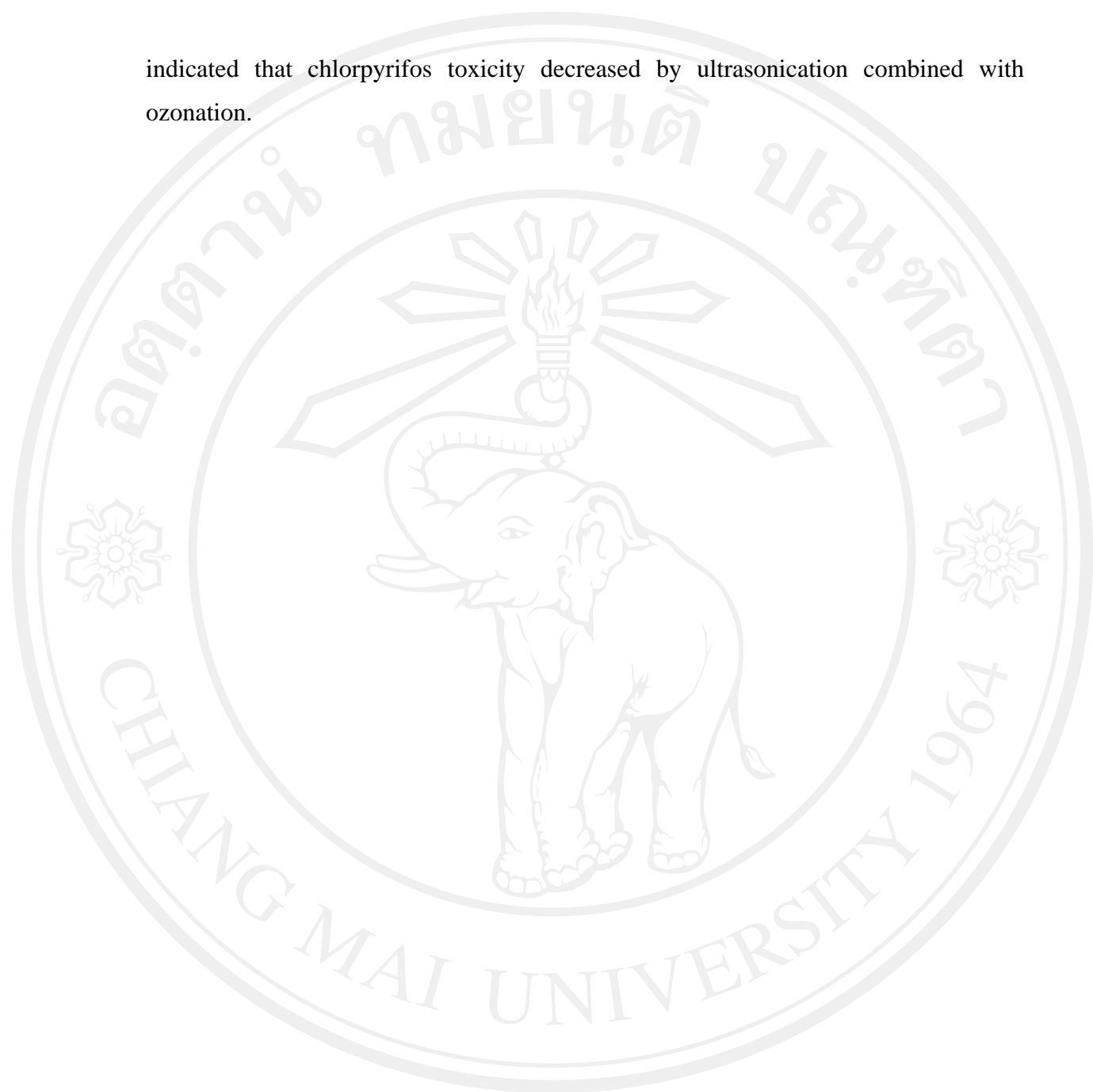
This research represents a comprehensive analysis of chlorpyrifos degradation in fresh bird chilli by ultrasonication and ozonation divided in to three parts; (i) the optimum conditions and oxidative degradation of treated standard chlorpyrifos solution, (ii) the reduction of chlorpyrifos residue in fresh bird chilli, and (iii) the toxicity of degraded chlorpyrifos solution and wastewater after washed chilli. The results from these three parts could be concluded as follows;

1. The standard chlorpyrifos degradation after ultrasonication or ozone treatment increased with increasing contact time and ultrasonic frequency. Ultrasonication (1 MHz) in combination with ozonation had a synergistic effect in reducing chlorpyrifos concentration with the highest rate change of 83.77 %, compared with ultrasonication or ozonation alone. Temperature, oxidation-reduction potential values and the concentration of chloride, nitrate and sulphate from the chlorpyrifos solution increased with a reduction of pH when using the combined treatment, it had related to the increasing chlorpyrifos degradation. However, the chlorpyrifos solution has not a toxic product during the ultrasonication combined with ozone treatment.

2. The ultrasonication of 1 MHz combined with ozone treatment had the highest efficiency to reduce chlorpyrifos residue in bird chilli by 76.81 %, with decreasing of disease incidence and no effect on quality evaluation of chilli after storage at 13 °C for 4 weeks.

3. The 1 MHz/O₃ combination reduced toxicity of chlorpyrifos by brine shrimp lethality test (BST). The combined method had the highest LC₅₀ with a value of 383.12 mg/l LC₅₀ values of ultrasonication, ozonation and the control were 14.25, 52.74 and 12.29, respectively. Toxicity evaluation in washing water of chilli fruit

indicated that chlorpyrifos toxicity decreased by ultrasonication combined with ozonation.



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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