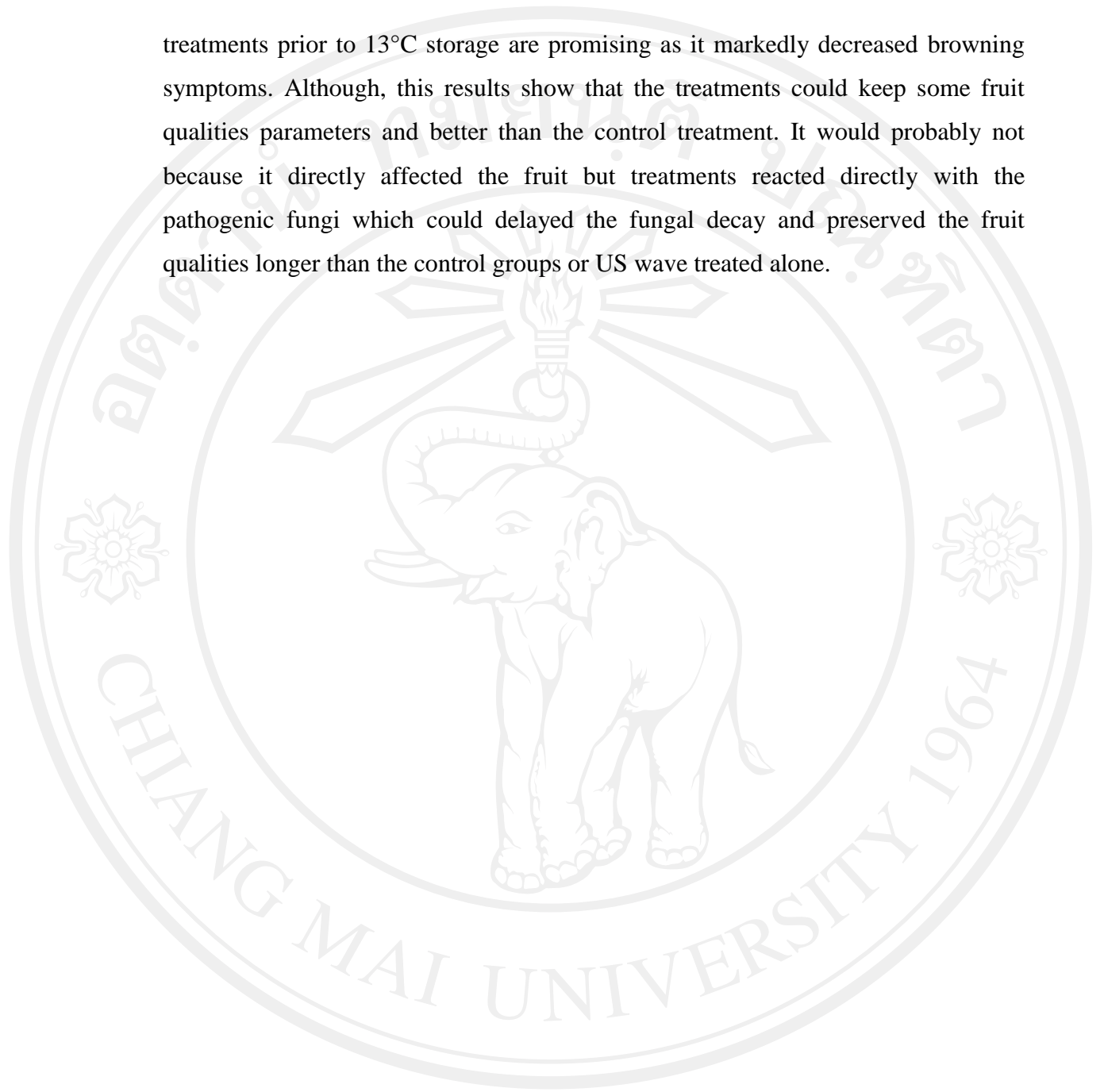


CHAPTER 6

Conclusions

1. One MHz US wave and all of the EO water treatments significantly inhibited spore survival of *Fusarium* sp. The combined treatments gave the best inhibition of mycelial growth. The application of combined EO water and US wave for controlling microorganisms on de-crowned pineapple has not previously been reported. Therefore, the synergistic effect of EO water and US wave may provide valuable insight into the reduction of microorganism on pineapple fresh produce. This combined treatment was the most effective in reducing natural decay of the fruit and prolonged shelf life for 20 and 7 days after storage at 13 and 25 °C respectively.
2. EO water, in combination with US wave, is more effective at controlling *Fusarium* sp. in de-crowned pineapple fruit than either treatment alone. The observation under scanning electron microscopy (SEM) confirmed that combination of EO water and US wave inhibited growth of fungi on de-crowned pineapple fruit. And transmitted light microscopy showed cell wall damage and abnormal germination of those spores. The combination treatment resulted the highest increases of some defense responses protein activities such as β -1,3-glucanase, Chitinase, PAL, POD and PPO. The control effect of combined treatment may be associated with the plant defense related (PR) protein and plant defense related enzyme in response to wide array of stresses including wounding and inoculating with *Fusarium* sp.
3. EO water and US wave treatments had no deleterious effects on qualities of pineapple fruit. Instead, it was trending to maintenance some quality parameter such as ascorbic acid and weight loss percentage. It maintained ascorbic acid levels, this effect has important nutritional quality implication. On the other hand, combined

treatments prior to 13°C storage are promising as it markedly decreased browning symptoms. Although, this results show that the treatments could keep some fruit qualities parameters and better than the control treatment. It would probably not because it directly affected the fruit but treatments reacted directly with the pathogenic fungi which could delayed the fungal decay and preserved the fruit qualities longer than the control groups or US wave treated alone.



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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