CHAPTER 5

CONCLUSIONS

Hexanal vapor showed a promising effect on inhibition of *L. theobromae* mycelial growth and spore germination *in vitro*. Hexanal had both fungistatic and fungicidal effects which depended on hexanal concentration and fumigation period. In response to hexanal fumigation, spores were killed or exhibited abnormal germination with excessive branching, a swollen appearance, and development of many vacuoles. Mycelia were ruptured, swollen and also developed many vacuoles after hexanal fumigation. Extracellular cellulase activity of *L. theobromae* mycelia decreased after hexanal fumigation, but polygalacturonase, pectin methylesterase, and cutinase activities were not affected.

For controlling longan fruit cv. Daw decay caused by *L. theobromae*, hexanal at 900 $\mu l\ l^{-1}$ for a 2 h fumigation period at ambient temperature was suitable. Cold temperature can delay the growth of *L. theobromae,* and the combination of hexanal fumigation and low temperature storage was effective in controlling fruit decay. Though hexanal and cold storage could control longan fruit decay, it also caused some phytotoxicity, a brown color on the outer and inner sides of the pericarp, and off-flavor. As a result, hexanal fumigation cannot yet be recommended for use in treatment of longan prior to cold storage. Coating fruit with Sta-fresh wax also controlled fruit decay, but it had no additional effect when combined with hexanal fumigation.

Phenolic compounds, polyphenoloxidase, peroxidase, polygalacturonase and cellulase in longan pericarp differed between control and *L. theobromae*-inoculated fruit. Hexanal treatment reduced phenolic compound content, whereas PPO, POD, PG and cellulase were increased during storage at 5^{o}C.