



## CHAPTER V

### CONCLUSION

In this research, a 2-DE proteome reference map for *P. dulce* seeds has been generated and the proteins were characterized by LC/ESI-MS/MS analysis. The identification of proteins from *P. dulce* was carried out by successively using the sequence database for MASCOT and MS-BLAST homology searches. Owing to the lack of available *P. dulce* genome and EST sequences, the initial identification rate was low and so searches were performed against a custom legume protein database comprising model legumes and soybean, which resulted in a protein identification success rate of 31%. This is somewhat similar to the early success rate in *M. truncatula* prior to the availability of its genome sequence. Thus it would easily expect the identification rate and validity, and therefore utility, of this proteomics database to increase as the sequence availability increased in the future. The identified proteins are, from their likely (homologously) annotated function, mostly related to energy production and plant defence response, suggesting that both these metabolic pathways are conserved in *P. dulce* and that these component proteins are relatively conserved protein sequences across species. This report of the 2-DE protein profile of *P. dulce* seeds may serve as a starting point to better understand the properties of *P. dulce* seed proteins.

Furthermore, this research is first reported on a plant lysozyme from *P. dulce* seeds which exerted an antifungal action toward *Macrophomina phaseolina* (charcoal rot). This purified lysozyme was successfully identified through the query of acquired tandem mass spectral data used in MASCOT search. Amino acid sequence of purified antifungal protein matched with chicken egg white lysozyme, which is sufficient to specify that this antifungal protein is lysozyme. This work is second reported that a lysozyme with antifungal activity purified from leguminous plants. This may play an important role in legume plant defense mechanisms against microbial pathogens and lead to the development of fungal pathogens disease control in crop.