

CHAPTER 1

INTRODUCTION

Considerable postharvest losses of fruit and vegetables are brought about by decay caused by fungal plant pathogens (Tripathi and Dubey, 2004). Shallot and onion are general species in the genus *Allium* that are one of the important economic crops cultivated in Thailand. They are consumed in the country and exported to several countries. During storage, some problems including sprouting (Brewster, 1994) and rotting of bulbs (Kelley and Granberry, 2000) are normally found and many diseases mainly cause by fungi. These problems cause the loss of storage yield, low productivity as well as poor quality of shallot and onion. Quick and effective management of plant diseases in shallot and onion is generally achieved by the use of synthetic fungicides (Takeda and Sakuoka, 1997). However, some fungicides are hazardous substances and create health hazards in human due to their residue toxicity (Khallil, 2001). Biological material should be used instead of chemical substance that can accepted by the consumer.

At present, natural compounds are used in many ways by human (Martins *et al.*, 2001; Poulev *et al.*, 2003). The use of natural compounds is an alternative method to control fungal growth because they have no effect on human and environment, often relatively inexpensive and specific to target (Alston, 1996). Plant extract -naturally derived compound- is obtained from a solution treating plants or parts of them with a solvent and concentrated through evaporation, distillation or some other processes (Commission working document, 2004). Only soft extraction with water and/or ethanol (excluding other solvents) is covered in the framework of this document. Thus, plant extracts have useful compounds as a substitute chemical.

Traditional plants in Thailand are natural resources, yielding valuable herbal products which are often used in the treatment of various symptoms and diseases. In addition, some plants contain substances that inhibit microbial growth. The biological

properties of the extracts of several species have been investigated by many works (Ojala *et al.*, 2000; Erturk *et al.*, 2003; Hammer *et al.*, 2003; Begum *et al.*, 2004; Dabur *et al.*, 2004). Many reports concentrate on antifungal activity of natural compounds (Carpinella *et al.*, 1999; Matos *et al.*, 1999; Mahmoud, 1999; Somchit *et al.*, 2003). However, the use of natural compounds to preserve shallot and onion after harvesting has never been reported. Traditional plants which possibly have antimicrobial activity should be tested against an appropriate microbial model to confirm the activity and to ascertain the parameters associated with them.

The objectives of this study

1. To screen the fungi on shallot and onion.
2. To study the effect of some plant extracts on inhibition of the isolated fungi by plate assay.
3. To study the effect of some plant extracts on inhibition of the isolated fungi which were infected on shallot and onion.