

CHAPTER 1

INTRODUCTION

Dendrobium is a very complex and extremely large genus of the Orchidaceae, comprised of a number of distinct groups and more than 1500 valid species (Sheehan and Sheehan, 1994). The *Dendrobium* species are distributed throughout Asia and Northern Australia, from Japan, China, India, Myanmar, Thailand through Malaysia, Philippine, Australia and New Zealand. The genus is divided into 41 sections for example, *Bolbidium*, *Callista*, *Formosae*, *Pedilonum*, *Dendrobium*, *Briviflores*, *Distichophyllum*, *Stacyobium*, *Rhopalanthe*, *Aporum*, *Oxystophyllum*, *Strongyle*, *Grasstidium*, *Conostalix*, *Phalaenanthe*, *Spatulata* and *Latourea* (Seidenfaden, 1985). Thailand is extremely rich in the genus (Kamemoto and Sagarik, 1975) there are about 150 species in Thailand. However, only few Thai species have been used in breeding program and exploited as parental plants in commercial hybrids.

Thailand is the leading country in exporting dendrobiums to world market. In 2007, the export value of all orchids was more than 2,500 millions Bath which about 70% was dendrobiums (Thailand International Statistic in Agricultural Product Service, 2008). Most of the commercial cut flower and potted cultivars are derived from intersectional polyploidy hybrids (Kamemoto *et al.*, 1987). *Dendrobium* not only has financial significance but also has medical importance. Some *Dendrobium* species produced an alkaloid that has been successfully isolated and applied as a tonic and antipyretic known as 'Chin Shin Hu' made from dried stem of *Den. nobile* (Yasugi, 1989). In addition, there are several *Dendrobium* that are known for sweet fragrant such as *Den. anosmum*, *Den. parishii* and *Den. scabrilingue*. In order to increase novelty character into commercial cultivars, fragrance is a character that breeder would like to incorporate in breeding program.

However, there are quite a number of obstacles in using those fragrant species in breeding program such as flowering period, immature fruit drop, distance of genetic background and marker of fragrant characteristics. Thus, this study was conducted in order to examine the

viability of storage pollinia, crossability and use some of molecular technique to detect the relationship of progenies with fragrant and non-fragrant parents.

Objectives

1. To study effects of temperature and storage period on pollinia viability of four fragrant *Dendrobium* species, *Dendrobium scabrilingue*, *Dendrobium anosmum*, *Dendrobium parishii* and *Dendrobium peguanum*.
2. To study effects of NAA application on delaying fruit drops in the crosses between *Dendrobium* cultivars and the four fragrant species.
3. To study the phenotypic distribution of the progenies derived from the crosses between *Dendrobium* cultivars and fragrant species.
4. To find suitable primers that could identify the relationship of the progenies and their parents.