

Pradipunt Thongtam na Ayudhaya 2009: Molecular Cloning and Expression of *flavonol synthase / anthocyanidin synthase* in *Dendrobium* and *Ascocenda* orchids.

Master of Science (Genetics), Major Field: Genetics, Department of Genetics.

Thesis Advisor: Associate Professor Pattana Srifah Hunhne, Ph.D. 93 pages.

*Anthocyanidin synthase* gene (*ans*) from two orchid genera, i.e., *Dendrobium* Sonia Earsakul and *Ascocenda* Princess Mikasa was successfully cloned and identified by the nucleotide sequences in the database. The amino acid sequences derived from the nucleotide sequences of these cloned genes were found to be 63 - 76 % similar to flavonol synthase (FLS) and 45 - 86 % similar to anthocyanidin synthase (ANS) in the database and as high as 86 % similar to ANS of *Oncidium* orchid, thus, making this cloned gene ambiguous between *ans* and *fls* (*ans/fls*). Gene expression of *ans/fls* in the two orchid species were determined using dot blot hybridization and qPCR in different tissues (root, leaf, flower bud and flower) and was found to have the highest expression in flower bud. Thin – layer chromatography (TLC) results indicated that cyanidin is the main anthocyanin compounds in the *Dendrobium* Sonia Earsakul purple flower and *Ascocenda* Princess Mikasa pink. However cyanidin and delphinidin are the major pigments contributing to the colorful bluish purple of *Ascocenda* Princess Mikasa blue orchid.

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Thesis Advisor's signature