

Parita Tonsaiphetch 2013: Identification of molecular markers for Phlai breeding using RAPD and SCAR. Master of Science (Horticulture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Mrs. Sermal Wongchaochant, Ph.D. 64 pages.

Identification of specific molecular markers of 2 groups of Phlai. The first group contains high terpinen-4-ol content e.g. *Zingiber montanum* 'Lueng' and *Zingiber montanum* 'Plooksake'. The second group contains low content of terpinen-4-ol, e.g. *Zingiber ottensii*. Screening of 46 Random Amplified Polymorphic DNA (RAPD) were conducted. The 16 primers, OPC01, OPC18, OPQ02, OPQ05, OPR01, OPR02, OPR06, OPS02, OPX06, OPY07, OPY11, OPY14, OPZ11, OPZ15, OPZ16 and OPZ18 revealed polymorphic band profiles. They produced 21 different bands from individual sample which showed polymorphisms between 2 groups of Phlai. These bands were developed to SCAR primers only 6 SCAR primers were generated and produced a specific band for each type of phlai. Y07_PY₁₁₂₅ primer produced specific band at 992 bp in *Zingiber montanum* 'Lueng'. R06_PY₈₇₅, Y11_PPS₆₂₆, and Z16_PPS₇₃₀ primers produced specific band at 721, 595 and 654 bp bands, respectively in both in *Zingiber montanum* 'Lueng' and *Zingiber montanum* 'Plooksake'. S02_PB₅₅₀ and X06_PB₈₀₀ primers produced specific band at 465 and 756 bp bands, respectively of *Zingiber ottensii*. R06_PY₈₇₅ and X06_PB₈₀₀ SCAR primers were tested with 20 Phlai populations from 6 locations in Thailand. The result showed that 721 bp band generated by R06_PY₈₇₅ primer was specified only in *Zingiber montanum* and 756 basepair generated by X06_PB₈₀₀ primer was specified only in *Zingiber ottensii*. However, there was data that may hit to chemical constituent producing gene or functional genes which specific to types of Phlai.

Student's signature

Thesis Advisor's signature