

Genetic variation among *Amorphophallus* sp. from northern Thailand and their glucomannan content

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Abstract

This study investigated the genetic variations among different accessions of *Amorphophallus* sp. collected in northern regions of Thailand. Forty-three samples were characterized by RAPD with four primers (ERIC1R, ERIC 2, BOXA1R, RPO1) the data from which were used to calculate genetic distances which were then visualized using multidimensional scaling and cladogram. The *psbM-trnD* region of their chloroplast genome was also sequenced and phylogenetic relationships were determined using parsimony analysis. In addition, glucomannan content was determined to find the relationship between genetic variation and glucomannan content. The results from the RAPD analysis show that the genetic distance values vary between 0.075 and 0.949 and that *A. muelleri* can be separated from *A. paeoniifolius*. However, the separation of the other species was ambiguous. The DNA sequence data suggested the presence of 5 different clades. All genetic data indicated that genetic variation was high. Glucomannan content was between 1.53-65.78% (w/w) depending on the species and the regions of origin. As a result, these markers appear to be suitable for the use as selection tools aiming at improving the industrial production of konjac glucomannan.