

ABSTRACT

Rice blast, caused by *Pyricularia oryzae* are major disease, which cause severe losses to yield and quality of rice. Utilization of the rice blast resistant varieties is considered to be the most effective and economical method to control the disease. However, resistant varieties are usually less durable resistance because the fungus is high genetic diversity, and able to break the resistance within a few seasons. Therefore, the screening and mapping for blast resistant genes that confer resistant to several blast isolates is important in breeding for the resistant varieties. In this study, two hundred and twenty eight F₂ population was developed from a cross between Yang Mawng)GS (20874 which showed high resistance against several blast isolates and KDML105. Plants were inoculated with mixed of 19 isolates at concentration of 10⁵ conidia/ml. conidia suspension of *P. oryzae* and the disease was scored 7 days later. The segregation of resistance and susceptible phenotype showed a goodness of fit to the ratio 15:1 ($P = 0.011$, $df = 1.0$), indicating that Yang mawng variety carried more than one of major dominant resistant allele. Two hundred and thirty simple sequence repeat (SSR) markers were screened for polymorphism. One hundred and eleven markers showed polymorphism between the parents KDML105 and Yang mawng. Bulk segregant analysis (BSA) was conducted and 3 markers included RM4543, RM431 and RM443 were obtained. This suggested that, the gene that control blast disease resistance in Yang mawng variety might locate on chromosome 1 of rice genome. Distribution of 3 microsatellite markers in 228 F₂- plants for the proportion of the susceptible parent allele; A: both parent allele; H: resistant parent allele; B, showed a good fit to the ratio of 1:2:1 with the P value of 0.51, 0.005 and 0.32, respectively. The linkage analysis with these markers showed that the blast resistant gene was linked to the markers RM543, RM431 and RM443 at the distance 85.1, 73.6 and 45.8 centimorgans (cM), respectively.

Keywords Thai indigenous rice, Blast resistance variety, Marker assisted selection, *Pyricularia grisea*, Broad spectrum resistance