RINGKASAN

Penelitian ini bertujuan untuk : 1) mengetahui estimasi efisiensi transformasi pCAMBIA5300 *cry*I*Ab-cry*I*Ac* dengan bantuan *Agrobacterium tumefaciens strain* GV3101 pada padi varietas Inpari 6, 2) mengetahui pengaruh beberapa kerapatan sel bakteri terhadap efisiensi transformasi, 3) mengetahui apakah kalus hasil transformasi telah tersisipi gen fusi *cry*I*Ab-cry*I*Ac.* Penelitian ini dilaksanakan pada bulan Mei sampai September 2018 di Laboratorium Biologi Molekuler, Balai Besar Penelitian dan Pengembangan Bioteknologi dan Sumber Daya Genetik Pertanian (BB Biogen), Bogor. Variabel pengamatan yang diamati pada penelitian ini meliputi 1) jumlah kalus lolos seleksi pada tahap ketiga seleksi, jumlah kalus dengan *green spot* yang terbentuk pada tahap pra-regenerasi, jumlah kalus beregenerasi, dan jumlah planlet yang terbentuk, dan 2) estimasi efisiensi transformasi melalui *Polymerase Chain Reaction* (PCR) *direct*. Hasil penelitian dianalisis dengan mengidentifikasi jumlah kalus yang terbentuk dan frekuensi transforman hasil PCR *direct* dengan visualisasi pita DNA menggunakan elektroforesis dan alat *chemidoc*. Hasil menunjukkan bahwa estimasi efisiensi transformasi pCAMBIA5300 *cryIAb-cryIAc* dengan bantuan *Agrobacterium tumefaciens strain* GV3101 cukup efektif dalam pembentukan tanaman transgenik padi varietas Inpari 6. Kerapatan sel bakteri 0,1 paling efisien terhadap efisiensi transformasi, dengan persentase sebesar 2,56%. Hasil deteksi keberadaan gen fusi *cry*I*Ab-cry*I*Ac* di dalam tanaman transgenik dan kalus stadia akhir transformasi padi Inpari 6 dengan PCR *direct* sebesar 5,84%.

Kata kunci: Transformasi *Agrobacterium strain* GV3101, efisiensi, padi, gen fusi *cry*I*Ab-cry*I*Ac*

SUMMARY

The research aimed to: 1) determine the estimated transformation efficiency of pCAMBIA5300 cryIAb-cryIAc mediated of Agrobacterium tumefaciens strain GV3101 in Inpari 6 variety rice, 2) determine the effect of various bacterial cell density on transformation efficiency, 3) find out whether the cryIAb-cryIAc fusion gene was inserted in the Inpari 6 calli that been transformed. The research was conducted from May to September 2018 at the Molecular Biology Laboratory, Indonesian Center of Agricultural Biotechnology and Genetic Resources Research and Development (BB Biogen), Bogor. Observation variables observed in this study were 1) the number of calli passed of selection in the third stage of selection, the number of calli which haves green spots formed at the pre-regeneration stage, the number of regenerated calli, and the number of plantlets formed, and 2) estimation of transformation efficiency through Polymerase Direct Chain Reaction (PCR). Analysis conducted were identifying the number of calli formed and the frequency of transformants from PCR direct by visualizing DNA bands using electrophoresis and chemidoc devices. The results showed that the estimated transformation efficiency of pCAMBIA5300 cryIAb-cryIAc mediated of Agrobacterium tumefaciens strain GV3101 was quite effective in the formation of Inpari 6 varieties of transgenic rice. The density of 0.1 bacterial cells is the most efficient for transformation efficiency, percentage achieved was 2.56%. The results of detection of the presence of cryIAb-cryIAc fusion genes in transgenic plants and end-stage calli transformation of Inpari 6 rice with PCR direct was estimated about 5.84%.

Keywords: Agrobacterium strain GV3101 transformation, efficiency, rice, fusion gene cryIAb-cryIAc