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Microbial Conversion of Ginseng Saponin with the β -glucosidase Produced by *Lactobacillus rossiae* MJ-20

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Ginseng (the root of *Panax ginseng* C. A. Meyer, *Araliaceae*) is frequently used as a crude substance taken orally in China, Korea, and Japan, as well as other Asian countries, as a traditional medicine. Ginseng saponins (ginsenosides) are the principal components having pharmacological and biological activities. More than 38 different ginsenosides so far have been isolated and identified from ginseng saponins. Among them, deglycosylated ginsenosides are known to be more effective *in vivo* physiological action and to act as active compounds. A lactic acid bacterium (designated MJ-20), which has β -glucosidase activity, was isolated from Kimchi using a MRS-Esculin Agar. This strain was identified as a member of the *Lactobacillus rossiae* on the basis of phylogenetic inference based on 16S rDNA sequences. In the enzymatic reaction, we confirmed the specific conversion of major ginsenoside Rb₁ to the pharmaceutically active minor ginsenosides, ginsenoside Rd, and Rg₃ by thin layer chromatography and high performance liquid chromatography.

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Field performance and morphological characterization of transgenic *Codonopsis lanceolata* expressing γ -TMT gene

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Field performance and morphological characterization was conducted on seven transgenic lines of *Codonopsis lanceolata* expressing γ -TMT gene. The green shoots were obtained from leaf explants culture after co-cultivation with *Agrobacterium tumefaciens* strain LBA 4404 harboring a binary vector pYBI121 that carried genes encoding γ -Tocopherol methyltransferase gene (γ -TMT) and a neomycin phosphotransferase II gene (npt II)for kanamycin resistance. The transgenic plants were transferred to a green house for acclimation. Integration of T-DNA into the T₀ and T₁ generation was confirmed by the polymerase chain reaction and southern blot analysis. The progenies of transgenic plants showed phenotypic differences within the different lines and with relative to control plants. When grown in field, the transgenic plants in general exhibited increased fertility, significant improvement in the shoot weight, root weight, shoot height and rachis length with relation to the control plants. However, all seven independently derived transgenic lines produced normal flower with respect to its shape, size, color and seeds number at its maturity. Overall, the agronomic performance of T₁ progenies of transgenic *Codonopsis lanceolata* showed superior to that of the seed derived non-transgenic plant.

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