Development of Functional Transgenic Tomato with riglyceridemic Action

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ABSTRACT

Globin digest (GD), hydrolyzed by acidic protease in diet is evidenced to reduce the serum triglyceride levels in blood. Molecular dissection of the underlying mechanism revealed that the peptide “ Val-Val-Tyr-Pro ”, designated as VVYP, was the prominent constituent having hypotryglyceridemic action in GD. Hence, the present study was conducted with a view to developing transgenic tomato plants with hypotryglyceridemic action. Using overlapping PCR, modified ammonium transporter 1 (Amt1) gene of tomato containing 1, 2, or 3 copies of the VVYP peptide was obtained without altering the original protein configuration. After sub-cloning the modified Amt1 gene into the plant expression vector pBI121, Agrobacterium-mediated transformation system was employed to transform the tomato to overexpress Amt1 gene. In addition to tomato, to preview the feasibility of this work, transgenic tobacco plants with hypotryglyceridemic action were also developed. Transgenic plants were selected on medium containing kanamycin as selectable marker and the transformants were analysed for the integration and expression of transgene by using molecular tools.

Keywords : overlapping PCR, serum triglyceride, tomato, transformation, VVYP peptide

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