

04-1-19

Transgenic Rice Plants Expressing Human Lactoferrin

Il-Gi Kim, Jin-Hyoung Lee, Myoung-Hoon Lee, Suk-Chul Suh¹, Hyo-Yeon Lee² and
Seong-Lyul Rhim*

Department of Genetic Engineering, Hallym University, Chuncheon 200-702, Korea

¹*National Agricultural Science and Technology Institute, RDA, Suwon 441-704, Korea*

²*College of Agriculture and Life Science, Cheju National University, Cheju 690-756, Korea*

Objectives

Human lactoferrin (hLf), an 80 kDa, single polypeptide protein, is abundant in human milk and has several biological activities including protection against pathogens, regulation of iron absorption, immune system modulation. We have transferred it to rice to introduce its biological functions for human health. The transgenic rice plants were further analyzed using molecular biological tools.

Materials and Methods

1. Plant materials: 24 transgenic rice plants (*Oryza sativa* L. cv. Dongjin)
2. Methods: Southern, Northern and Western blot analyses

Results and Discussion

In order to identify the presence of hLf gene, we carried out Southern blot. It showed that the hLf gene was inserted into transgenic rice plants. Expression of hLf gene was also confirmed by Northern and Western blot analyses. The hLf occupied approximately 0.2 % of total soluble protein. All the transgenic rice plants were produced only truncated hLf protein with molecular weight of 48 kDa. Although it is not known about reason of production of partial-length hLf, there was a previous report that transgenic tobacco cells expressing 48 kDa hLf showed the antimicrobial activity. One of the important features of hLf is protection against the invasion of pathogens. Therefore, the resistance test of transgenic rice plants against microbes, especially rice pathogens, should be proceeded as a further work.