

(05-A-2)

## Expression of human lactoferrin gene transformed rice(*Oryza sativa* L.) via *Agrobacterium*

Seong-Eun Oh, Satoshi Nishiguchi, Key-Zung Riu, Seong-Lyul Rhim<sup>1</sup>, Suk-Chul Seo<sup>2</sup>, and Hyo-Yeon Lee\*

College of Agriculture and Life Science, Cheju national University, Jeju 690-756, Korea

<sup>1</sup>College of Natural science, Hallym University, Chuncheon, 200-702, Korea

<sup>2</sup>National Agricultural Science and Technology Institute, RDA, Suwon, 441-707, Korea

### Objectives

To produce resistant rice against pathogene expressing human lactoferrin through *Agrobacterium* and to extend utility of transformed rice expressing in leaves as well as grains of plants by using ubiquitine promoter.

### Materials and Methods

1. Plant materials : Rice (*Oryza sativa* L. cv. Dong Jin)
2. Methods : Herbicide test, PCR, Southern blot analysis, Western blot analysis, Antibacterial activity

### Results and Discussion

Callus derived from mature seeds of rice(*Oryza sativa* L. cv. Dong Jin) were co-cultivated *Agrobacterium tumefaciens* EHA105 containing Ubi and genes for HLF and bialaphos resistance(*Bar*). Transgenic plant survived on medium containing 2.5mg/L bialaphos were resistant to herbicide(Meiji herbiace) at a dosage lethal to wild type plants. PCR and Southern blot analysis confirmed that T-DNA was integrated into the plant genome. The expression of lactoferrin protein was detected by Western blot analysis from leaves and grains of transformants. The expression of a human lactoferrin gene produces a potent antibacterial protein in transgenic rice leaves. T<sub>1</sub> progenies were normally grown on media containing 5mg/L bialaphos.

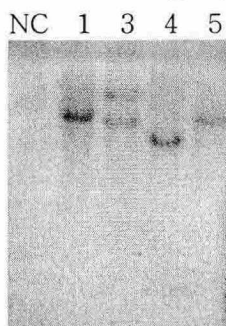


Fig. 1. Southern blot analysis of transgenic (Lines 1,3-5) and control (NC) plants. 40 $\mu$ g genomic DNA was digested with *Eco*RI and hybridized to *Bar* probe

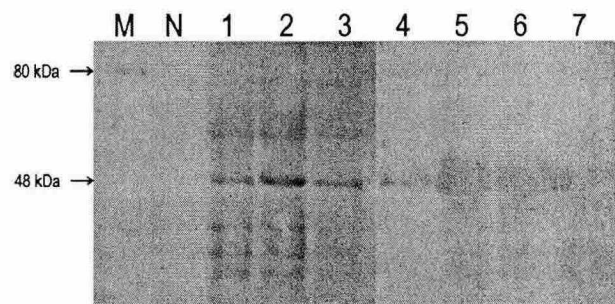


Fig 2. Western blot analysis of human lactoferrin protein in transgenic rice plants.

Lanes 1 : Purified human lactoferrin , Lanes 2 : non-transgenic rice plant , Lanes 3-6: transgenic rice plants.