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## Production of antimicrobial human lactoferrin in transgenic rice (*Oryza sativa* L.) using *Agrobacterium tumefaciens*

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### Objectives

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

### Materials and Methods

1. Materials :

Rice (*Oryza sativa* L. cv. Dong Jin)

*Agrobacterium tumefaciens* EHA105

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*). The putative transgenic plants were regenerated on 2.5mg/L bialaphos-containing medium comprising MS supplemented with 2mg/L BA, .3mg/L NAA and 0.3% gelrite. The resistant plants were survived, while wild-type plants were died after spraying 1g/L herbicide (Basta) in the field. T-DNA integration into the plant genome was confirmed by PCR and Southern blot. The 7 lines among 10 line are segregated to 3:1 for resistant and sensitie to ialaphos, whereas the 2 lines (line 4,5) are observed to 1:1 confirmed a semidominant and 1 lines (line 3) was segregated to 15:1 corresponded to 2 copy number of Southern blot analysis perormed previously. The expression of human lactoferrin 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 grown in the field showed resistance to herbicide.