Expression of B subunit of *Escherichia coli* heat-labile enterotoxin in transgenic rice

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Escherichia Coli heat labile toxin (LT) is a potential muscular immunogen and immunoadjuvant for co administered antigens. It was previously synthesized a gene encoding the B-subunits of LT adapted to the coding sequence of tobacco plants and fused to endoplasmic retention signal SEKDEL to enhance its level of expression in plants. Transformation technology has now broad application in both basic research and cereal crops improvement, but there is a lock of well characterised, tissue-specific and developmentally regulated promoters. HMW-GS promoters are currently the most powerful endosperm specific promoters. These promoters are ideal candidates to drive a high level of tissue specific expression of transgene in cereals. The Bx17 endosperm specific promoter was used to accumulate the product of the sLTB gene in the starchy endosperm of the rice seed. The synthetic LTB gene was cloned into a plat expression vector under the control of endosperm specific Bx17 High Molecular Wheat glutenin promoter and transformed to rice callus by particle bombardment transformation. PCR analysis conformed stable integration of sLTBgene into the rice chromosomal DNA. Expression of LTB RNA and protein were observed by RT-PCR and Western blot analysis. The amount of LTB protein detected in transgenic rice seeds was 2.5% of the total soluble protein. Enzyme linked immunosorbent assay indicated that plant synthesized LTB protein bound specifically to GM1-ganglioside, suggesting that the LTB subunits formed active pentamers. The LTB protein expression was detected only in rice endosperm.

References

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