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Expression of a herbicide resistant gene in tall fescue by *Agrobacterium*-mediated transformation

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Objectives

Herbicides are widely used during crop cultivation and are usually removed from the environment through natural degradation as well as by microorganism or plants. In order to develop herbicide resistant forage plants, efficient plant regeneration and transformation systems have been established for tall fescue (*Festuca arundinacea* Schreb.). A binary expression vector containing a herbicide resistance gene, *MxPPO* (*Myxococcus xanthus* protoporphyrinogen oxidase), under the control of CaMV-35S promoter was introduced into the tall fescue plants via *Agrobacterium*-mediated genetic transformation method.

Materials and Methods

1. Plant material: Tall fescue (*Festuca arundinacea*), cv. K-31.
2. Expression vectors: A binary vector pCAMBIA1300 containing *MxPPO* genes and hygromycin phosphotransferase (HPT) into the T-DNA region was used as expression vector. *Agrobacterium* strain EHA105 was used for genetic transformation.
3. Transformation: Embryogenic calli were immersed on *Agrobacterium* suspension with 200 μ M acetosyringone, and transferred to the co-culture medium. calli were washed with 250 mg/L cefotaxime and transferred to selection medium (N6 medium, 1 mg/L 2,4-D, 3 mg/L BA, 35 mg/L hygromycin) cultured for 4-6 weeks. Hygromycin resistant shoots were rooted on a hormone-free MS medium and transferred to soil.
4. Herbicide treatment: Leaf squares were incubated with various concentration of acifluorfen in a growth chamber at 25°C in dark condition for 12 h and then exposed to continuous light for 72 h.

Results and Discussion

Transgenic tall fescue plants expressing *MxPPO* gene were developed. PCR and Southern blot analyses revealed the transgenes integrated into the transgenic plants. Moreover transgenic plants did not exhibit any necrosis during the acifluorfen treatments. further investigation is required. To characterize the transgenic plants.

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