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Application of 3D-Fectin Transfection to Wheat Protoplast

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[Abstract]
Transformant construction using protoplasts requires less sample preparation time than particle bombardment and *Agrobacterium*-mediated transfection. There are two protoplast transfection methods: the PEG-mediated transfection method and the Lipofectamine transfection method. When Lipofectamine is mixed with DNA, Lipofectamine surrounds DNA like a cell membrane because of the positive charge of Lipofectamine. The Lipofectamine-DNA complex makes DNA insertion into cells easier. Fectin has similar functions to lipofectamine and is less expensive than lipofectamine. The 3D-fectin technology has been highlighted in animal cell transfection. Therefore, we performed PEG-mediated transfection, Lipofectamine transfection, and 3D-pectin transfection with a GFP construct. Protoplasts were isolated using the first leaf of "Bobwhite" after 4 hours of incubation in an isolation Buffer (cellulase + macerozyme). Protoplasts transformed by each method were cultured for 48 hours, and then GFP fluorescence expression was confirmed under confocal microscopy. GFP signals were detected in PEG-mediated transfection and Lipofectamine transfection. And the GFP signals were also detected in protoplasts to which 3D-fectin technology was applied, suggesting that 3D-fectin technology can be used for plant protoplast transfection.

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