Genetic Transformation of Peanut with the Gene for Oxalate Oxidase. (C07-grabau093229-Oral)

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Abstract:

Sclerotinia minor is the causal agent of Sclerotinia blight, a highly destructive disease of peanut in Virginia, North Carolina, Oklahoma and Texas. There is compelling evidence that oxalic acid is involved in the pathogenicity of Sclerotinia. The enzyme oxalate oxidase catalyzes the conversion of oxalic acid to carbon dioxide and hydrogen peroxide. We have cloned the oxalate oxidase gene for introduction into peanut for enhanced pathogen resistance. In addition to its putative role as a disease resistance gene, oxalate oxidase can be used as a sensitive reporter gene. We have optimized two enzyme activity assays, a histochemical stain to monitor bombardment and visualize transformed sectors, and a quantitative assay that allows measurement of activity in various transgenic lines. We have established tissue culture and transformation conditions for the production of transgenic embryogenic material for several elite Virginia peanut cultivars. Six months after callus was bombarded and placed on selective medium, we have obtained 418 lines of transformed embryogenic callus. We are currently regenerating transformed somatic embryos for recovery of primary transformants.

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