

**TRANSGENIC APPROACH TO REDUCE
GOSSYPOL IN COTTONSEED**

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Abstract

Elimination of gossypol from cottonseed will both enhance the feed value of the meal and reduce the processing cost of cottonseed oil. We are evaluating a transgenic approach to reduce gossypol in the seed without affecting its levels in other mature parts of the plant where it has beneficial function. To this end, we are making use of antisense technology to down-regulate the expression of d-cadinene synthase gene. d-cadinene synthase is an important enzyme involved in the biosynthesis of gossypol. We have made antisense, binary vector constructs using the two cDNA clones for d-cadinene synthase isolated by Chen et al. (1995). For the initial testing of the antisense strategy we have used CaMV 35S promoter to drive the antisense genes. We have utilized *Agrobacterium tumefaciens*-mediated transformation using strains LBA4404 and EHA105. Cotyledon and hypocotyl of var. Coker 312 were used as tissue explants for cocultivation. Several hundred putative, transformed calli have been obtained using kanamycin selection. Plants will be regenerated from these calli via embryogenesis. After transfer of plants to soil, they will be subjected to molecular analysis to confirm the presence and integration of transgenes. Various tissue samples from transformed plants will be analyzed for gossypol levels. Reduction of gossypol levels in the transgenic tissue will indicate the efficacy of the transgenic approach. The next step will be to use seed-specific promoters to drive the antisense genes with the aim of reducing or eliminating gossypol in cottonseed only.