P374

SELECTING REGENERABLE MAIZE GENOTYPES WITH HIGH ACTIVITY OF THE GAMMA-ZEIN GENE PROMOTERS

MAURICIO ANTONIO LOPES, Maria Jose Vilaca Vasconcelos, Mauricio Shusterschitz Antunes, Douglas Barduche, Monica Evangelista Carvalho, Edilson Paiva

1. Núcleo de Biologia Aplicada, CNPMS/EMBRAPA, Caixa Postal 151, 35701-970 - Sete Lagoas, MG, Brazil.

With the advent of biotechnology, there has been a renewed interest in the development of maize and other grains that have increased amounts of essential amino acids. Through genetic engineering it is possible to isolate genes encoding seed storage proteins and change their coding sequence so that the proteins they produce contain the missing essential amino acids. Alternatively, the regulation of endogenous genes wich code for small amounts of high quality proteins can be up regulated to increse the proportion of certain essential amino acids in the seed. What remains to be done is to identify and develop the molecular mechanisms that allow high expression levels of the genetically engineered genes, while reducing the expression of endogenous genes encoding storage proteins of poor nutritional quality. Towards this end we have developed CMS 477, a normal experimental maize population selected for high gamma-zein accumulation. Gamma-zein is a storage protein which has its deposition increased in parallel with *o2* endosperm modification. Several lines of evidence suggest that modifiers of *o2* are regulators of gamma-zein transcription. It may be that the endosperm modifier genes, responsible for the high levels of gamma zein gene expression, will provide a suitable mechanism for regulating synthesis of a genetically engineered zein gene. Several inbred lines derived from CMS 477 have been evaluated for *in vitro* type II callus formation. Three of these lines have shown the ability to produce regenerable calli and will be utilized in transformation studies with constructs driven by the gamma-zein gene promoter. Supported by: FINEP, EMBRAPA/CNPMS, FAPEMIG and CNPq/RHAE