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GENETIC TRANSFORMATION OF COWPEA WITH THE GENE OF METHIONINE-RICH DELTA-ZEIN FROM MAIZE

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Cowpea (*Vigna unguiculata* L. Walp) is a legume of great importance in human nutrition, being a rich source of protein. Its great adaptability to different climates and environmental conditions, makes it an important culture in breeding programs. Although it is a rich source of protein, cowpea, like other legumes, is deficient in sulfur amino acids. The storage proteins of maize (*Zea mays*) of the δ-zein family, posses high levels of sulfur containing amino acids with methionine constituting about 26%. For this reason, the proteins are used as targets for heterologous expression in cultivars that are subjected to nutritional improvement. The objective of this study was to obtain cowpea plants carrying an expression cassette seed-specific to a gene of a protein rich in methionine residues. To achieve this, we constructed an expression vector bearing a methionine-rich delta-zein gene from maize under the control alpha chain of beta-conglycinin of soybean as a promoter linked to its signal peptide and 35S CaMV terminator. The vector also contains an expression cassette of Atahas gene conferring tolerance to herbicides from group of imidazolinones, for selection of transformed plants. Following transformation via the biolistic technique, embryos were selected on MS medium containing imazapyr. Out of the 3,052 embryos bombarded, 4 positive plants were recovered as confirmed by PCR and Southern blot. Subsequent acclimatization allowed for the recovery of only one plant with the transgene inherited by its progeny. However, when germinated PCR positive seeds of the progenies were analyzed by Western blot there was no evidence of the expression of delta-zein. These results led us to believe that delta-zein was not expressed or that its expression was not detectable possibly due to the lodging of the transgene at genome sites with low expression levels or physiological differences between the source of the transgene and cowpea. Attempts are still being made to obtain more transgenic events that may lead to in the level of methionine in cowpea seeds.