DEVELOPMENT OF RNAI-BASED VECTOR AIMS AT CREATING ANTIVIRAL SOYBEAN PLANTS IN VIETNAM

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TÓM TẮT:

Abstract—Soybeans (Glycine max (L.) Merrill) are easily infected by soybean mosaic virus (SMV) and bean yellow mosaic virus (BYMV), which may reduce their yields from 66%-80%. At present, preventive measures are still the main methods to reduce losses caused by these two viruses. RNAi is thus considered as a modern and promising technique to generate plants resistant to viruses. In this study, we cloned and characterized the Coat protein (CP) coding gene of SMV lines SL1 and SL2, which is 720 bp in length and encodes 240 amino acids. The two conserved regions of CP gene from these two viruses (SMV and BYMV) were integrated into a 573 bp fragment, called CPi(SMV-BYMV). Vector pK7GW-CPi (SMV-BYMV), carrying the CPi (SMV-BYMV) fragment in sense and antisense orientation separated by an intron, was successfully designed by Gateway technology (Invitrogen). Once being transformed into plant cells, this vector is expected to be transcribed into a hairpin RNA structure that could induce RNAi mechanism to degrade the CP genes of SMV and BYMV, thus limit their infection. Therefore, this vector could be a potential tool to generate transgenic soybean plants that are resistant to both two virus species SMV and BYMV in Vietnam