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The Φ C31 integrase is encoded by phage of Stereotomycies soil bacteria. The enzyme is a number of the serine catalyzed site-specific recombinases. The ability of this enzyme to bring about genomic integration let the system is employed for gene therapy and creation of transgenic organisms. Native integrase eDNA was modified and amplified by PCR. The modification was utilized by designing an overhanging forward primer contained T7 promoter, kozak sequence and ATG instead of GGT as starting codon in native sequence. A Poly A sequence and polyadenylation signal were added to the end of the PCR product by designating of an overhanging reverse primer. The PCR product (1921 bp), containing the full length of integrase eDNA was cloned into a cloning vector (pUC18) and was sequenced. The aim of this study was to design an appropriate construction for producing the efficient variant of integrase mRNA and protein in vitro. These products are suitable molecular tools in any site specific gene integration studies using Φ C31 integrase system.

Keywords: Φ C31 integrase, transgenic organisms, site specific gene integration