



Characteristic element of matrix attachment region mediates vector attachment and enhances nerve growth factor expression in Chinese hamster ovary cells

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ABSTRACT. Preliminary studies have suggested that a characteristic element of the matrix attachment region (MAR) in human interferon- β mediates the adhesion of vectors to Chinese hamster ovary (CHO) cells. In this study, we investigated if vector adhesion increased nerve growth factor (NGF) expression in CHO cells. The MAR characteristic element sequence of human interferon- β was inserted into the multiple-cloning site of the pEGFP-C1 vector. The target NGF gene was inserted upstream of the MAR characteristic element sequence to construct the MAR/NGF expression vector. The recombinant plasmid was transfected into CHO cells and stable monoclonal cells were selected using G418. NGF mRNA and protein expression was detected by reverse transcriptase-polymerase chain reaction and enzyme-linked immunosorbent assay, respectively. Plasmid reduction experiments were used to determine the state of transfected plasmid in mammalian cells. The insertion of MAR

into the vector increased NGF expression levels in CHO cells (1.93-fold) compared to the control. The recombinant plasmid expressing the MAR sequence was digested into a linear space vector. The inserted MAR and NGF sequences were consistent with those inserted into the plasmid before recombination. Therefore, we concluded that the MAR characteristic element mediates vector adhesion to CHO cells and enhances the stability and efficiency of the target gene expression.

Key words: Matrix attachment region (MAR); Characteristic element; Attached vector; Transgene expression; Chinese hamster ovary cell; Nerve growth factor; β -interferon MAR