Regulation of expression DLX1 gene, whose elevated levels are detected in patients with acute myeloid leukemia with FLT3-ITD mutations, is not still completely explored topic. The first aim of this study was to determine which selected signaling pathways regulate gene expression of DLX1. ERK a JNK pathways were selected by using qRT-PCR and western blot. These pathways cause activation of the transcription factor AP-1 subunits, the AP-1 putative promoter binding site was identified also in the promoter of the DLX1 gene. The second aim of this study was to test the hypothesis on the regulation of gene expression of DLX1 (via ERK/JNK pathway) through AP-1 binding site on the promoter. Dual luciferase assay using luminescent luciferase activity was performed to test this hypothesis. Gene of the luciferase is contained in the used luciferase vector. The short and the long part of the DLX1 promoter (around AP-1 site) were inserted before the gene of the luciferase in the constructs used in this method. The results of this study indicate that the regulation of gene expression through AP-1 promoter binding site is important but not sufficient part of the regulatory cascade running through ERK and JNK pathway. There must be another transcription factors activated by ERK1/2 kinase which are probably also involved in the regulation of DLX1 gene.