

## Abstract

This thesis is focused on the study of the structure and mechanism of human 14-3-3 protein, which is one of the important regulatory proteins present in all eukaryotic cells. Nowadays it is known seven isoforms of this protein in mammals. Although their crystal structure shows a high similarity, their mutual comparison reveals some changes. The aim of this work is to prepare experimental tools for verification whether the differences in the crystal structure of the  $\zeta$  isoform are present in solution and how the structure-functional mechanism of this isoform is affected. The optimization of 14-3-3zeta recombinant protein expression with incorporated a photo-labile analog of leucine in the protein sequence was performed using limiting medium with prokaryotic expression system of *E. coli* BL-21 DE3 Gold or system of auxotrophic *E. coli* K-12 with non-functional leucine biosynthesis.