Abstract

Heme sensor proteins are the fourth group of hemoproteins. In this group of hemoproteins heme plays an important role in signalization. Dissociation and/or association of heme detecting proteins serves as an important physiological function in regulation of enzyme activity or gene expression. In this bachelor thesis all the actual knowledge about selected forms of eukaryotic heme sensor proteins previously published in scientific articles are summarized. The experimental part of this bachelor thesis is focused on preparation of recombinant protein heme regulated inhibitor (HRI) and its substrate eukaryotic translation initiation factor 2 alpha (eIF2α). Firstly the preparation of the plasmids with genes HRI and eIF2α was conducted. In the next step these proteins were prepared in prokaryotic system formed by E. coli BL-21(DE3). The final sample of HRI (7,7 μM in total volume 400 μl and 60 % of homogenity) and the final sample of eIF2α (51,3 μM in total volume 400 μl and 80 % of homogenity) were obtained by the purification process. The study of thermal stability of these samples provided important informations on appropiate storage and manipulation with them in further experiments.

Key words:

heme-base sensors, heme, kinase, tranduction of signal, isolation of plasmids, prokaryotic expresion, protein purifacation.

(In Czech)