eIF5A seems to be involved in both, translation initiation and elongation. It was also reported to affect assembly of P-bodies. Given similarities of P-bodies with stress granules (SGs) we decided to test the role of eIF5A in dynamics of heat-induced SGs and its implications for the cell recovery. For the evaluation of eIF5A function in SGs formation was used the temperature- sensitive (ts) mutant eIF5A-3 (C39Y/G118D) cultivated under permissive temperature 25°C and Rpg1-GFP fusion protein as a marker of SGs. The cells were exposed to robust heat shock at 46°C for 10 minutes. The ability of the mutant cells to recover was tested by propidium iodine staining and colony forming units plating. We found that the eIF5A-3 mutant forms heat-induced SGs more loosely aggregated, indicating that the fully functional eIF5A is necessary for SGs assembly. However, it does not seem to affect the rate of SGs dissolution. Survival tests indicate that eIF5A-3 mutant cells are susceptible to dying in a similar way as WT cells; nevertheless, their ability to resume proliferation is significantly better. We also observed a loss of the ts phenotype of the eIF5A-3 mutant. This loss cannot be explained by reversion of mutated eIF5A sequence into normal. Probable cause lies in the adaptive evolution. Our results indicate role of eIF5A in actin dynamics. We suggest that role of eIF5A in SGs assembly might help to elucidate its function.
Key words: translation, heat stress granules, actin, elongation, factors