

6. CONCLUSIONS

- 1) Although we observed few differences between EF-Tus from two strains of *Streptomyces aureofaciens*, its amino acid sequence was found to be identical. This means that data from *in vitro* biochemical experiments with tetracycline producing mutant strain *S. aureofaciens* 84/25 are valid also for the wild type *S. aureofaciens* ATCC 10762.
- 2) Obtaining the sequence of *tuf1* gene coding for active EF-Tu in *Streptomyces aureofaciens* permitted us to create and compare 3D model structures of EF-Tu from *S. aureofaciens* with *S. coelicolor* and *M. smegmatis*. We have found that certain small part of EF-Tu from Streptomyces surface structure differs, which might be a ground for differences in aggregation. The differences between the structure of Streptomyces EF-Tu and that of *M. smegmatis* are much more pronounced.
- 3) EF-Tu associated with the cell membrane of *S. coelicolor* undergoes posttranslational modification(s) during differentiation, which might allow the protein to accept and transmit signals from the environment. We focused our attention on the phosphorylation and identified very variable pattern of EF-Tu phosphorylated isoforms, which was changing dramatically with the developmental stage. These isoforms might represent phosphorylations or other, yet unknown, posttranslational modifications of EF-Tu controlling its function in the cell differentiation, intracellular or extracellular signalling or other functions in the cell.
- 4) We showed that spores of *S. coelicolor* contain protein kinase able to phosphorylate its own EF-Tu as well as externally added purified factor from *S. aureofaciens*. This indicates that phosphorylation of EF-Tu might play an important role in the germination of spores.
- 5) We found that in Streptomyces membrane fraction there is present kinase(s) capable of phosphorylation of both, its own, as well as an externally added EF-Tu from other strains, whereas *Mycobacterium* membranes contain protein kinase phosphorylating only its own EF-Tu.
- 6) We observed phosphorylation of EF-Tu also in *Streptomyces granaticolor*, where phosphorylation of this protein significantly depended on the age of liquid culture. Transmembrane kinase PKG2 is not involved in phosphorylation of this protein.