

ABSTRACT

Trichomonas vaginalis is flagelated microaerophilic protozoan parasite from Excavata group, which causes trichomoniasis, the most common nonviral sexually transmitted disease in the world. It causes vaginitis in women and urethritis in man and it can also cause problems for example during pregnancy. This thesis is aimed on the characterisation of hydrogenosomal iron-sulfur flavoproteins (ISF) from *Trichomonas vaginalis*, proteins, which were only recently discovered in the proteome of hydrogenosome of *T. vaginalis*. Specifically, we have focused on characterisation of ISF3 which is, according to our data, active homodimer and binds flavin mononucleotide (FMN) and iron-sulphur centre in its active site. The iron-sulphur centre is not characterised yet. ISF3 is able to reduce oxygen, hydrogen peroxide, sodium nitrate and metronidazole also in the enzymatic system with PFO and ferredoxin. Next, I tried to reduce ammonium sulphate with ISF3, but unsuccessfully. These results correspond with the activities obtained for ISF from *Methanosarcina thermophila*, where ISF reduces oxygen and hydrogen peroxide to water. In addition, ISF3 is able to reduce nitrogen compounds. It is important according to the fact, that metronidazole is a drug from the group of 5-nitroimidazoles. The other results show the decrease of expression of ISF3 in trichomonads resistant to metronidazole. Thus it cannot be excluded that ISF3 is another enzyme contributing to metronidazole reduction and thus the decrease in its expression could be a part of the development of resistance in trichomonads to metronidazole.

Key words: *Trichomonas vaginalis*, hydrogenosome, FeS cluster, flavin mononucleotide, iron-sulfur flavoproteins