ABSTRACT

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Diploma thesis title: Ames test in the drug development

**Background:** Thesis objective is the determination of potential genotoxicity of newly developed drugs within primary testing and the introduction of the Ames microfluctuation test which can be used in common laboratory conditions.

**Methods:** I used commercially supplied kit based on the principles of Ames test which detects reverse mutation through colour changes of the samples using bacterial strains *S. typhimurium*. At first I had to study literary sources and then I could design the procedures of the Ames microfluctuation test, preparation of the chemicals and storage of the strains which are optimal for all laboratories.

**Results:** The drug samples T6445 and T6447 with 30 µM concentration tested by metabolic activation S9 on bacterial strain ST TA 98 show genotoxicity. The sample UOCHB1 with 30 µM concentration tested without activation shows possible genotoxicity on both strains ST TA 98 and ST TA 100. Other samples do not show any toxicity. I used 3 different procedures during the designation of assay. The most suitable version of the test is the procedure using bromothymol blue as a colour indicator that is added to the samples on the test day 3.

**Conclusions:** The drug samples T6440, T6443, T6748, UOCHB2 with 30 µM concentration and the drug sample UOCHB1 with 10 µM and 1 µM concentration do not show toxicity on bacterial strains ST TA 98 and ST TA 100. The optimization of the microfluctuation test is successful on the strain ST TA 98.

**Keywords:** Ames test, genotoxicity, drug development, *Salmonella typhimurium*