

The colorectal cancer is one of the most common tumour diseases of all. If diagnosed at early stage, there is a reasonable chance for at least five-year survival. Common methods for screening and diagnosis are relatively simple and also quite successive, however (still) not perfect – for proper diagnosis an invasive procedure is necessary. In general there is a significant effort to make the procedures of screening and diagnosis more comfortable for patients as well (to make them) more precise – which means that there is great chance for employing methods of molecular genetics and biology including biochip methods.

The purpose of this final-year thesis was to test the possibility of the optimization of this biochip method, originally developed by the manufacturer for ~ 6 ~

testing DNA extracted from faeces, for samples of genomic DNA extracted from white blood cells with the objective to detect possible mutations in four genes of the interest (K-ras, BRAF, TP53 and APC) with a strong relation to this cancer. The evaluation of samples was made on a biochip analyzer Evidence Investigator TM.

In the final –year thesis is a summary of theoretical evidence in biological, clinical and also technical side of this affair. The biochip method is described together with an example of the actual procedure, presentation of achieved results and their elaboration and also with attached commentary.

In summary the used method is rather time consuming (for assessment of faeces sample demanding 3 days, in our case 2 days) with considerable chances for errors. The results are not much convincing, with the possible exception in the case of the assessing alleles of the APC gene. It would seem that the result values are too much variable – in our opinion relatively randomly.

In our conclusion, we cannot recommend this method for a genomic DNA and maybe also not for DNA extracted from faeces. The possibility of implementation of this method into the praxis, at least at its present state, would be relatively problematic.