

ABSTRACT

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Title of diploma thesis: Monitoring changes in microRNA expression in cervical cancer

Cervical cancer is the fourth most common cancer among women globally. Prevention of cervical cancer is based on routine screening using quality diagnostic tests. This diploma thesis focused on searching for sensitive and specific diagnostic markers that would detect the early stage of carcinogenesis. Suitable candidates for a diagnostic markers are microRNAs (miRNAs), which negatively post-transcriptionally regulate gene expression. In carcinogenesis, miRNAs are deregulated and may play a significant role in cancer development. The aim of this diploma thesis was to identify significantly deregulated miRNAs that could be used as diagnostic markers of cervical cancer.

In this diploma thesis, the combination of miR-423-5p and miR-25-3p was selected as the endogenous miRNA control based on the results of real-time PCR analysis and the results of the *RefFinder* algorithm. After that, the relative expression of selected miRNAs (miR-10b-5p, miR-145-5p a miR-182-5p) was determined by real-time PCR and using the $2^{-\Delta\Delta Ct}$ method. A total of 70 FFPE cervical cancer tissue samples and 30 control normal tissue were analysed.

Based on statistical analysis, significant downregulation of miR-145-5p and significant upregulation of miR-182-5p were detected. The combination of these two miRNAs could be used as potential diagnostic multimarker of cervical cancer.