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Effect of cigarette smoking on circulating plasma miRNA in healthy individualsBengt Åke Andersson^{1,2}, Shariel Sayardoust³ and Nongnit Laytragoon-Lewin^{1,2}¹Jönköping University, Sweden²Linköping University, Sweden³Institute for Postgraduate Dental Education, Jönköping, Sweden

Introduction: Cigarette smoke contains toxic, carcinogenic, reactive and oxidant substances that causes DNA damage, transform epithelial cells phenotype and genotype, induce inflammation and remodeling immune response. Micro RNAs (miRNAs) are non-coding RNAs involved in gene expression in multicellular organisms at epigenetically level. MiRNA influence cell cycle progression, inflammation and smoking related tumours. miRNA expression pattern is essential for correct differentiation of immune cells.

Materials & Methods: A total of 140 healthy individuals, 39 current cigarette smokers and 101 individuals with no current or previous history of tobacco use (non-tobacco users) were included in this investigation. A panel of 11 miRNA was chosen in this study based on their documented associations in inflammation, immune response, oncogene regulation, tumor suppressor genes and they were all expressed in analysed plasma. Extraction and quantification of miRNA from plasma, miRCURY LNA™ Universal microRNA PCR system (Exiqon, Denmark) were used.

Result & Discussion: Of the 11-analysed miRNA, only miR-21-5p showed statistically significant decreased levels in 39 smokers compared to 101 non-tobacco users. miR-21 has been described as an oncomir and increased levels of miR-21 have been seen in several types of solid tumours and haematological malignancies. The epigenetic alterations of miRNA in smoking related head and neck cancer will be evaluated in further studies.

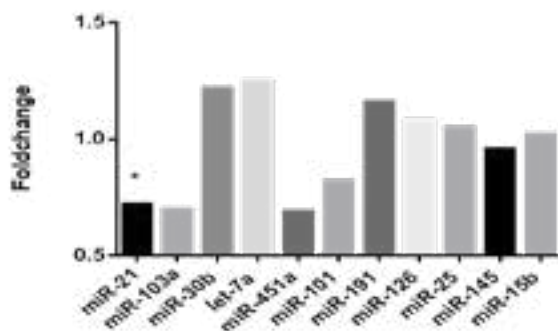


Figure. Fold change between smokers and non-smokers on levels of miRNA . Adjustment was done for age and gender. *Statistically significant levels between smokers and non-smokers.

Biography

Bengt Åke Andersson's research projects focusing on diagnostic and prognostic biomarkers associated with the effect of cigarette smoking on human health, cancer risk and clinical outcome of smoking related cancer.

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