

Effect of LDD-medication on salivary metabolites in patients with pSS studied with 1H-NMR spectroscopy

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Introduction

Sjögren's syndrome is nowadays one of the most common autoimmune diseases characterized by mononuclear cell infiltration of exocrine glands, including salivary glands (Heltnick et al. 2008). This study was aimed to investigate the mutability of salivary metabolic profiles of patients with primary Sjögren's syndrome (pSS) treated with low-dose doxycycline medication using 1H-NMR (nuclear magnetic resonance) spectroscopy

Material & Method

Stimulated whole-mouth saliva was gathered from female pSS patients (n = 14), during four laboratory visits (at baseline, after 1 week, after 10 weeks and after 20 weeks). Patients received low dose doxycycline medication which duration was 10 weeks. Placebo was administered as a same timeline as low dose doxycycline. This study was randomized, double-blinded study. Using 1H-NMR spectroscopy, concentrations of identified metabolites were calculated, and mutabilities was determined by statistical analysis.

Results & discussion

Taurine differed significantly between the baseline and 1 week (p=0.024), between the baseline and 10 weeks (p<0.001), and between the baseline and 20 weeks (p<0.001). Alanine and glycine concentrations vary more in both intra- and inter-individual aspects during low dose doxycycline medication. Because the NMR spectroscopy technique is useful for noninvasive monitoring and screening of the severity of pSS, should the results of this study vary in more wider scale study protocol. This study proposes that LDD medication alters the concentrations of these metabolites found in saliva samples of pSS patients. In addition, the altered saliva metabolite profile reflects the metabolic progress or disturbance of the secretory processes in salivary glands in patients with pSS.

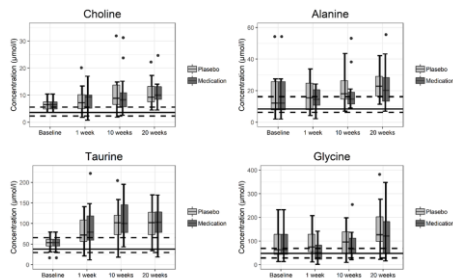


Figure 1. Box- and whisker plots represents variations in choline, taurine, alanine and glycine concentrations in saliva samples (from baseline to 20 weeks) of pSS patients. The median is presented in the middle of the box as a horizontal line. The bottom illustrates lower quartile and top illustrates upper quartile as boundaries of the boxes. Whiskers represent 95th and 5th percentiles. Healthy controls are illustrated as horizontal lines; the dashed lines illustrate upper and lower quartiles and continuous line illustrate the median.

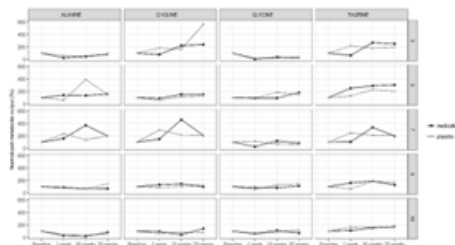


Figure 2. Illustration of intra-individual variations in alanine, choline, glycine and taurine metabolite outputs, metabolite output (µmol/min) was formed by multiplying metabolite concentration (µmol/l) with salivary flow rate (ml/min). This variable was normalized by dividing 1 week, 10 weeks, 20 weeks subsequent values by baseline output values. Patients are identified with original numbers, which were given to them at the start of study, on the right side of illustration.