

## EVALUATION OF EXTERNAL AND INTERNAL FACTOR ON THE VARIABILITY OF EXHALED BREATH CONDENSATE PARAMETERS

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### **Background:**

Mediators in exhaled breath condensate (EBC) have been reported to be elevated due to exercise or lung disease. For some mediators (Lactate, H<sub>2</sub>O<sub>2</sub>, pH) results are inconsistent and difficult to reproduce, as they can show circadian variability or occur in the ambient air condensate (AAC). The aim of this study was to investigate the circadian variability of mediators in ACC/EBC during different daytimes (intraday) and days (interdays).

### **Method:**

ACC and EBC were collected via EcoScreen, (Viasys, Germany) over 3 daytimes (8:00, 12:00, 16:00) and 5 days. H<sub>2</sub>O<sub>2</sub> and lactate were analyzed using the EcoCheck (FILIT, Germany) and pH was analyzed using an ABL520 (Radiometer, Denmark). Data were expressed as mean±std and coefficient of variation (CV).

### **Results:**

In ACC no lactate was detected, but H<sub>2</sub>O<sub>2</sub> (23.99±1.39 nmol/l) and pH (6.27±0.11) with a significant (p<0.01) increase at midday. Intraday-CV was 1.74% (pH) and 2.25% (H<sub>2</sub>O<sub>2</sub>). In EBC, lactate (23.74±1.22 µmol/l), H<sub>2</sub>O<sub>2</sub> (242.80±15.36 nmol/l) and pH (6.24±0.12) were detected and all mediators showed maximum value at midday (p>0.01). Intraday-CV varied between 2.10-4.40%. No sig. differences were found in ACC or EBC between the 5 days. The Interday-CV varied in ACC between 1.79-5.83% and in the EBC between 2.10-3.40%.

### **Conclusions:**

Concentration of mediators in ACC may be one factor in the heterogeneity and limited reproducibility of former studies. Our results indicate that a day to day comparison is less relevant than considering different daytimes, which show a circadian variability of mediators in ACC and EBC. This should be taking into account when studying mediators in EBC.