**Alcohol study, Metabolomics Centre, North West University South Africa, Potchefstroom.**

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Alcoholism is one the major problems in South Africa. In the metabolomics centre of the North West University at Potchefstroom, South Africa we explore the metabolic effects of acute alcohol abuse. An intervention study was developed based on an observation in a preliminary metabolomics investigation on the effect of acute alcohol consumption in healthy cases that indicated some NAD depletion The experimental group consisted of 24 medically confirmed healthy males, between 20 and 24 years of age, residing in the same student hostel of North-West University (South Africa).

Four treatments (Vehicle, Vehicle + NAD, Vehicle + Alcohol, Vehicle + NAD + Alcohol) consisted of a measurement of the baseline effect of imbibing the vehicle (500 mL flavored water) that was also used in the remaining three interventions. All the cases were randomly assigned to a treatment/intervention group until all 24 participated in all four interventions. Urine samples were collected at time zero, just prior to consumption, followed by four further samples at 1, 2, 3 and 4 hours after imbibing the vehicle, providing six samples in total for each case.

Urine samples were analyzed using NMR. Spectra were pretreated and the following metabolites were identified and quantified. Details will follow. The spectra were analyzed and 29 metabolites have been identified and quantified.

The idea is to develop a linear mixed model of the data with fixed effects (treatment NAD, treatment Alcohol, and time) and random effects per individual and interactions of this random effect with the other fixed effects. Such a model ca be developed for each of the measured metabolites. In this simple case the model parameters are estimated per individual and per metabolite. More advanced approaches can be used in which the individual effects are modelled in a population approach with an average value and a variance. Finally, as metabolites will correlate a multivariate approach can be developed to improve interpretability.