"New markers of steroid profile in blood: Differentiating testosterone administration from (simultaneous) ethanol consumption (acronym: SPOLBlood)"

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Project Overview

Ethanol affects the steroid profile in a way that may mask testosterone administration. Our group has shown that urinary ratios 6OHAndrosterone3G/ Epitestosterone17G and 6OHEtiocholanolone3G /Epitestosterone17G increase after testosterone administration while preliminary results show they decrease after ethanol consumption. This behavior suggests that those two glucuronides may be useful to distinguish between changes in T/E due to ethanol consumption and those due to the combined administration of testosterone and ethanol.

A project to investigate those markers was approved in 2018 (ISF18D13OP). The clinical trial includes the administration of placebo, testosterone, alcohol and the combination of testosterone plus alcohol. Samples of urine, blood and saliva are collected. However, a budget reduction in the approved grant prevented investigating the new biomarkers not just in saliva, but even in blood.

The steroid profile in blood is very relevant. Previous attempts to develop a blood steroid profile lost the focus including a mixture of a few androgens, plus estrogens and corticoids. However, the key analytes in blood will also be steroid conjugates. The ratio of free to conjugated testosterone is known to change greatly after oral testosterone administration. Our primary results show how the new glucurono-conjugated biomarkers 6OH-A3G and 6OH-Etio-3G and others can be monitored in blood. The administration of ethanol affects phase II metabolism and therefore this specific blood steroid profile needs to be studied.

This project aims at studying the blood samples collected in project ISF18D13OP to study the behavior of the new biomarkers 6OH-A-3G and 6OH-Etio-3G in blood as part of a more selective steroid profile, and the usefulness of the combination of phase I plus phase II metabolites in blood to differentiate between the consumption of alcohol alone and its consumption during testosterone administration.