

## **PROJECT REVIEW**

### ***"Evaluation of alternative glucocorticosteroid metabolites for the discrimination between legal and forbidden administration routes"***

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Glucocorticosteroids are widely used in sports medicine for the treatment of conditions such as asthma and acute injuries. The use of glucocorticosteroids by oral, intravenous, intramuscular and rectal routes is forbidden, and their use by other routes is allowed. Since some glucocorticosteroids are marketed in different administration forms, the distinction between different routes of administration through the analysis of urine samples is needed. A reporting level of 30 ng/mL for glucocorticosteroids and their metabolites has been established by WADA to detect corticosteroid misuse. Unfortunately, this reporting level is not suitable to distinguish therapeutic use from forbidden administration for all corticosteroids and the investigation of more effective criteria of discrimination is needed.

The aim of the project is to elaborate analytical strategies to be used in the effective differentiation between legal and forbidden administration routes for synthetic glucocorticosteroids. A comprehensive study of the metabolic pathways of corticosteroids will be performed using liquid chromatography coupled to tandem mass spectrometry. Both phase I (including saturated A-ring and acidic metabolites) and phase II (including conjugates with sulphate and cysteine) metabolism will be studied in several excretion studies already available in our lab for triamcinolone acetonide, betamethasone, prednisolone, methylprednisolone and budesonide.

Differences between responses of every metabolite detected in the different administration routes will be evaluated. Potential markers will be selected based on these results. Selectivity and sensitivity of these potential markers will be compared with current reporting level.