PROJECT REVIEW

"Enantioselective pharmacokinetics of salbutamol and application to doping control"

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Oral dosing of salbutamol is known to lead to beneficial performance effects in athletes and is banned, however, it is allowed to be delivered by inhalation for use in athletes with asthma. The drug is usually used as the racemic mixture consisting of active R- and inactive S-enantiomers (non-superimposable mirror image molecules) which have a different time course in the blood and urine.
These differences are further amplified by whether the drug is taken orally or by inhalation. To date, anti-doping strategies have not capitalised on this difference in how enantiomers are eliminated from the body. Furthermore, studies have not adequately investigated the effects of repeated dosing of both inhaled and oral salbutamol over several days on urine levels in a doping control context. We will apply our advanced analytical technique that can measure both R- and S-salbutamol in urine, to samples from patients treated with either oral or inhaled therapy over the course of a week. The project will validate the benefits, namely increased sensitivity and reduced false positives and false negatives, of measuring R- and S-salbutamol enantiomers. This will allow to better discriminate between oral and inhaled salbutamol.