

THIOURACIL: THE CHALLENGE OF DEVELOPPING A QUANTITATIVE ULTRA HIGH PERFORMANCE LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY METHOD IN URINE WITHOUT DERIVATISATION

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Thiouracil belongs to the xenobiotic thyreostats, growth-promoting agents banned in Europe since 1981 (EC/81/602).

For monitoring the illegal use in livestock sensitive and specific analysis methods have been developed the last decades. The most sensitive one exploits 3-iodo benzylbromide derivatisation and indicated an endogenous prevalence of thiouracil in bovine urine, correlated with a Brassicaceae diet. However, in case of derivatisation it is of uttermost importance to discard false positive results. The goal of this study was therefore, to develop a method for the quantification of thiouracil from urine without derivatisation.

Evaluation of various extraction techniques showed that addition of a reducing agent, followed by LLE with ethyl acetate, was the most optimal. An effective UHPLC-MS/MS method was developed for the detection of underivatized thiouracil in urine.

This method was validated for all xenobiotic thyreostats and should provide the answer to the alleged semi-endogenous status of thiouracil (EC/ 2002/657).