



UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI SCIENZE VETERINARIE
PER LA SALUTE, LA PRODUZIONE ANIMALE
E LA SICUREZZA ALIMENTARE



Determination of thyreostats in bovine urine and thyroid glands by HPLC-MS/MS

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ABSTRACT

Thyreostats are orally active substances used in medicine and veterinary work to regulate the production of T₃ and T₄ hormones by the thyroid gland. They can be illicitly administered to livestock for fattening purposes in order to improve body-weight gain due to an important retention water in edible tissues and in the gastroenteric tract. Their fraudulent utilisation is severely prohibited by the European Union, which requires a precise monitoring. In 2007, European Union of Reference Laboratories in the CRL Guidance paper proposed a recommended concentration of 10 ng mL⁻¹ in urine, which has just been suggested to increase to 30 ng mL⁻¹. In order to facilitate the detection of thyreostats in two bovine matrices, urine and thyroid glands, a method was developed without a previous derivatisation step, frequently used for HPLC analysis of Thiouracil. A salting-out assisted liquid-liquid extraction procedure for preparation was carried out to facilitate the movement of the thyreostats to the tert buthyl methyl ether phase. The HPLC-MS/MS analytical procedure of the method was validated according to the guidelines of Commission Decision 2002/657/EC and has permitted to obtain satisfactory performance parameters and, decision limit and detection capability values for all the thyreostats lower than the recommended values hitherto mentioned.

REFERENCES

J. Vanden Bussche, H. Noppe, K. Verheyden, K.Wille, G. Pinel, B. Le Bizec, H. F. De Brabander . 2009. *Anal. Chim. Acta.*, 637, 2-12. Commission Decision 2002/657/EC of 12 August 2002 implementing Council Directive 96/23/EC concerning the performance of analytical methods and the interpretation of results. *Off. J. Eur. Commun.* 2002, L221, 8-36. CRL. CRLs view on state of the art analytical methods for national residue control plans. CRL guidance paper, 2007. J. Wauters, J. Vanden Bussche, B. Le Bizec, J. A. L. Kiebooms, G. Dervilly-Pinel, S. Prevost, B.Wozniak, S. S. Sterk, D.Grønningen, D. G. Kennedy, S. Russell, P. Delahaut, L. Vanhaecke. *J Agr. Food Chem.*, 63, 1339-46.