

# LC-MS/MS in the Endocrine laboratory

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Currently, chromatography (GC but more commonly (U)HPLC) is the analytical method of choice for several hormones, either because the immunoassays suffer from extensive cross reactivity or because chromatography permits the simultaneous measurements of hormones. With the increase of robust and affordable LC-MS/MS systems, the next step forward in specificity was taken and LC-MS/MS was rapidly incorporated mainly for the small molecule hormones in the endocrine laboratories. To be useful in the clinical diagnostic practice, it is of utmost importance that methods are both analytically and clinically validated. As the majority of the applications of LC-MS/MS in the clinical laboratories are “home-made”, special care is needed.

Nowadays, more and more the focus for new assay developments is shifted from small molecules to the analysis of protein and peptide hormones by LC-MS/MS (*i.e.* insulin and analogs or oxytocin). Their analysis is more challenging than that of small molecules. These analytical challenges include sample pretreatment, chromatography and internal standardization. Moreover, as post-translational modifications and/or oxidation/reduction reactions can take place, the specificity of MS analysis can also raise problems.

In this presentation the development of an LC-MS/MS method for the determination of a peptide hormone will be presented in detail. Issues regarding sample preparation and chromatography will be discussed. Moreover attention will be paid to the clinical validation of this assay.