

## Author's Accepted Manuscript

COMPARISON OF SAMPLE PREPARATION STRATEGIES FOR TARGET ANALYSIS OF TOTAL THYROID HORMONES LEVELS IN SERUM BY LIQUID CHROMATOGRAPHY-QUADRUPOLE TIME-OF-FLIGHT-MASS SPECTROMETRY

E. Álvarez, Y. Madrid, M.D. Marazuela



PII: S0039-9140(16)30942-0  
DOI: <http://dx.doi.org/10.1016/j.talanta.2016.12.001>  
Reference: TAL17091

To appear in: *Talanta*

Received date: 18 October 2016  
Revised date: 28 November 2016  
Accepted date: 1 December 2016

Cite this article as: E. Álvarez, Y. Madrid and M.D. Marazuela, COMPARISON OF SAMPLE PREPARATION STRATEGIES FOR TARGET ANALYSIS OF TOTAL THYROID HORMONES LEVELS IN SERUM BY LIQUID CHROMATOGRAPHY-QUADRUPOLE TIME-OF-FLIGHT-MASS SPECTROMETRY, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2016.12.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# COMPARISON OF SAMPLE PREPARATION STRATEGIES FOR TARGET ANALYSIS OF TOTAL THYROID HORMONES LEVELS IN SERUM BY LIQUID CHROMATOGRAPHY-QUADRUPOLE TIME-OF-FLIGHT-MASS SPECTROMETRY

E. Álvarez, Y. Madrid, M.D. Marazuela \*

*Department of Analytical Chemistry, Faculty of Chemistry, Universidad Complutense de Madrid, E-28040 Madrid, Spain.*

\*Corresponding Author: Dr. Maria Dolores Marazuela, Dept. of Analytical Chemistry, Faculty of Chemistry, Universidad Complutense de Madrid, E-28040 Madrid, Spain. Phone: ++0034913944217; Fax: ++0034913944329. marazuela@quim.ucm.es

## ABSTRACT

This paper describes a novel method based on liquid chromatography quadrupole time-of-flight-mass spectrometry (LC-QTOF-MS) for target analysis of total THs in serum. Several sample preparation strategies have been evaluated to reduce matrix effect (namely, HybridSPE cartridges, supported liquid extraction, SLE and solid phase extraction, SPE). Deproteinization and further clean-up with mixed-mode SPE was selected as the best strategy for sample preparation, since achieved the cleanest extracts and reduced ionization suppression effects (between -11 and -24%).

Method validation was performed by the analysis of control human serum samples. Criteria for confirming THs identity in serum extracts were based on retention times, accurate masses, isotopic pattern and MS/MS fragmentation pattern. Moreover, the quantitation capabilities of the LC-QTOF-MS method were also evaluated in terms of linearity, precision, accuracy and sensitivity by the application of matrix-matched calibration.

Additionally, the developed LC-QTOF-MS method successfully provides qualitative information on endogenous components responsible of ion suppression (e.g. lysophosphatidylcholines), via post acquisition data analysis. This demonstrates the significant advantage of using LC-QTOF-MS, as it allows retrospective querying of the acquired data without the need of re-injecting/re-processing the samples.

**Keywords:** LC-ESI-MS bioanalysis, thyroid hormones, human serum, sample preparation, matrix effect, phospholipids.

## 1. Introduction

Download English Version:

<https://daneshyari.com/en/article/5141355>

Download Persian Version:

<https://daneshyari.com/article/5141355>

[Daneshyari.com](https://daneshyari.com)