Quantitation of 17β-Estradiol in Serum by LC-MS/MS: Achieving 2 pg/mL Sensitivity Using an Aggressive Sample Preparation Procedure

Matthew Myer, Benjamin Beppler

TriCore Reference Laboratories, 1001 Woodward Pl NE, Albuquerque, NM 87102

A method for the quantitation of 17β-Estradiol in human serum, suitable for application on a LC-MS/MS clinical system, is examined. The sample preparation procedure includes a liquid-liquid extraction and derivatization in dansyl chloride, followed by a solid phase extraction. This procedure ensures maximally efficient extraction of the analyte from the serum while significantly reducing matrix interferences in order to achieve the clinically necessary 2 pg/mL sensitivity. The linear range of the assay is demonstrated as 2-5000 pg/mL with a typical patient CV of <7% and excellent calibration agreement (<2% bias) with the Center for Disease Control’s Hormone Standardization (HoSt) program.