

Joint Event
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The role of mass spectrometry in improving the diagnosis and treatment of patients with thyroid diseases

Statement of the Problem: Patients diagnosed with hypothyroidism (20 million in USA) are usually treated with T4 monotherapy (90% are female). Despite treatment with T4 monotherapy and immunoassay measurement of TSH, FT4, FT3, T4, and T3 all being normal, approximately 50% of these patients claim they still have symptoms of hypothyroidism.

Methodology & Mass Spectrometry Studies: The same samples when analyzed by mass spectrometric methods frequently reveal that T3 and FT3 are low and occasionally that FT4 and T4 are low as well. Adjustment of dosages of T3 and T4 almost always corrects the clinical problem.

Conclusion & Significance: Current immunoassays for thyroid hormones are unreliable at low concentrations and correct diagnosis and treatment of hypothyroidism requires measurement by LC-MS/MS with appropriate dosage adjustment.

Biography

Steven J Soldin earned his Honors degree in Chemistry at the University of Witwatersrand in South Africa where he subsequently received his Master's degree in Organic Chemistry, and also his PhD in Biochemistry. He enrolled and obtained his Boards in Clinical Chemistry at the University of Toronto. In 1988, he accepted the position of Director of Clinical Chemistry at Children's National Medical Center in Washington, DC. As he was developing his mass spec work, he moved to the Clinical Research Center at Georgetown University as Director of their Mass Spectrometry Core facility, where he still serves as Adjunct Professor in the Department of Endocrinology and Metabolism. Starting 2011, he became a full time Senior Scientist at the Department of Laboratory Medicine, National Institutes of Health, USA, where he additionally holds the position of a Deputy Director of Chemistry and Director of Post-doctoral training program and the laboratory mass spectrometry facility.

sjs44@georgetown.edu



Steven J Soldin

National Institutes of Health, USA