

Laboratory Medicine Bulletin

Serum Cortisol by Liquid Chromatography and Tandem Mass Spectrometry

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St. Paul's Hospital now offers **serum cortisol analysis by tandem mass spectrometry** on the AB Sciex API-5000 LC-MS/MS system. This method will not be used for routine cortisol analyses but it will be available on special request for the investigation of serum samples for which immunoassay results are in question: altered plasma matrix (eg pregnancy, chronic kidney disease), antibody-mediated interference—heterophile and human anti animal antibodies (1), or if there is known or suspected presence of related steroids known to cross-react (2,3,4) with immunoassay methods (eg fludrocortisone, prednisone, prednisolone, betamethasone). It will also be used for the multiplex analysis of cortisol and aldosterone on samples collected from the adrenal veins for the localization of aldosterone producing adenoma.

At present, hospitals performing adrenal vein collections are often analyzing samples for cortisol before sending to St. Paul's Hospital for aldosterone analysis and interpretation. However, cortisol data from referral centres cannot be easily employed because of specialized dilution requirements for adrenal vein samples (5). For this and other reasons (ie the hazards of specimen mislabelling, transcription errors) **all cortisol analyses for adrenal vein samples will be performed at St. Paul's Hospital and cortisol analysis at referring sites will be unnecessary. In the Vancouver Coastal Health Authority Sunquest Laboratory Information System, the appropriate battery code to use at order entry is AVSAC.**

This cortisol assay has been tested for interference from dexamethasone, fludrocortisone, prednisone, prednisolone, methylprednisolone, betamethasone, cortisone, triamcinolone, aldosterone, corticosterone, 11-dexoycorticosterone, 11-deoxycortisol, 21-hydroxycortisol. Because of co-elution and similar ionization properties, there is ~5% cross-reactivity with prednisolone, which is a well-known phenomenon for LC-MS/MS based cortisol assays. No other interferences were found with the mass transition used to quantify cortisol.

Specimen Type: Red Top Serum
Minimum Specimen Volume: 750 uL



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2. Owen LJ, Halsall DJ, Keevil BG. Cortisol measurement in patients receiving metyrapone therapy. *Ann Clin Biochem.* 2010;47:573-5
3. Siemens Immulite 2500 Package Insert for Cortisol. PIL5KCO-8, 2008-04-07.
4. Siemens Centaur Package Insert for Cortisol. 04670726 Rev. G, 2009-12.
5. Young WF, Stanson AW. What are the keys to successful adrenal venous sampling (AVS) in patients with primary aldosteronism? *Clin Endocrinol (Oxf)*. 2009;70:14-7.