

Laboratory Medicine Bulletin

METHOD CHANGE FOR INSULIN & C-PEPTIDE

June 7, 2011

As of June 8, 2011, St. Paul's Hospital laboratory will switch the insulin and c-peptide methods to the ROCHE Cobas e411® immunoassay. They were previously measured on the IMMULITE 2500® analyzer.

The ROCHE insulin method has improved accuracy and precision profile compared to the IMMULITE insulin method¹, and is also less susceptible to interferences such as heterophile antibodies.

The reference intervals for the two methods have changed significantly as shown:

	ROCHE	IMMULITE
Fasting Insulin (pmol/L)	<95	<70
C-peptide (pmol/L)	325-1090	230-990

Table 1 Reference ranges for Fasting Insulin and C-Peptide


Passing-Bablok regression analysis revealed the following relationship between the new and previous methods:

$$\text{For insulin: ROCHE} = 1.165 * \text{IMMULITE} + 12.64\text{pmol/L.}$$

$$\text{For C-peptide: ROCHE} = 1.006 * \text{IMMULITE} + 93.35\text{pmol/L.}$$

Unlike the Immulite method, the ROCHE method for insulin exhibits minimal cross-reactivity with insulin analogs (ie. Aspart, Glargine, Lispro)². This lack of sensitivity is both an advantage as well as a potential disadvantage ie The ROCHE insulin method is specific for endogenous human or porcine insulin but it is unable to confirm insulin overdose due to analog insulins. Other testing strategies (eg lack of beta hydroxybutyrate, referred out testing for insulin analog specific test methods) are necessary to confirm the diagnosis of analog insulin induced hypoglycemia.

Please do not hesitate to contact us at 604-682-2344 if you have any questions.



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1. Manley SE and Stratton IM et al. Comparison of 11 human insulin assays: implications for clinical investigation and research. Clinical Chemistry. 2007 May;53(5):922-32.

2. Owen WE and Roberts WL. Cross-reactivity of three recombinant insulin analogs with five commercial insulin immunoassays. Clinical Chemistry. 2004 Jan;50(1):257-9.