Method Guide: 40161

Atomic Absorption Method Guide
Li in Blood Serum

Key Words

- Blood Serum
- Lithium
- Flame
- Atomic Emission

Principle

The sample is diluted 1:10 with deionised water, and lithium is determined by flame atomic emission spectrometry using an air-acetylene flame. Sodium is added to standard and sample solutions as an ionisation buffer.

Reagents

Lithium master standard (10.0 mM/L)
Dissolve 0.3695 g of dry lithium carbonate in the minimum necessary quantity of hydrochloric acid, and make up to 1.0 litre with deionised water in a volumetric flask. This solution must be stored in a plastic bottle.

Lithium sub-stock standard (1.0 mM/L, dilute 10.0 mL of the master standard to 100 mL with deionised water)

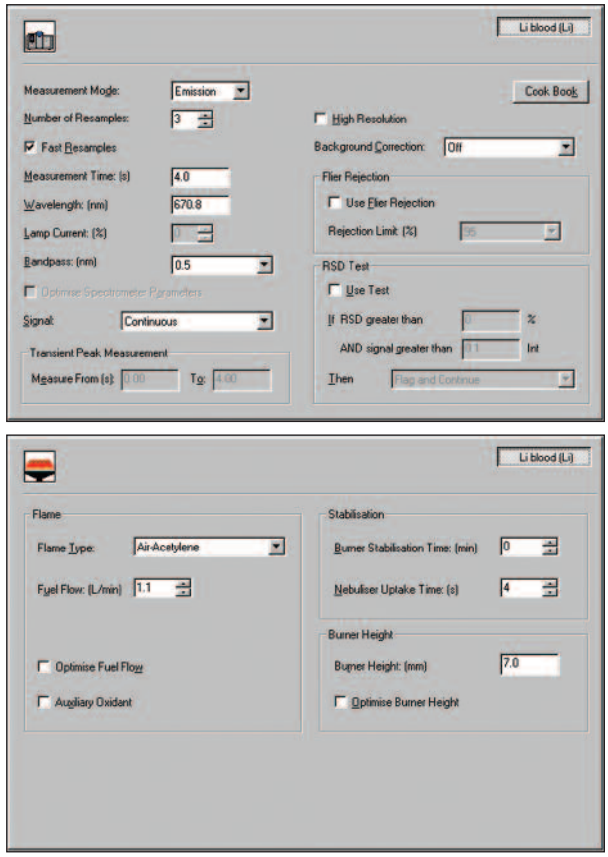
Ionisation buffer stock solution
Dissolve 0.3273 g of dry sodium chloride in water and make up to 1.0 litre with deionised water.

Working standards
Prepare working standards containing 0, 0.05, 0.1 and 0.2 mM/L of lithium by adding 0, 5.0, 10.0, and 20.0 mL of the lithium sub-stock standard into a series of 100 mL volumetric flasks. Add 10.0 mL of the ionisation buffer stock solution to each flask and dilute to volume with deionised water.

Sample Preparation

Using a micro-pipette, transfer 1.0 mL of the serum sample into a clean, dry 10 mL volumetric flask, add 1.0 mL of the ionisation buffer stock solution and make up to volume with deionised water. Ensure that the solution is thoroughly mixed before analysis. 0.2 mM/L of lithium in this solution is equivalent to 2.0 mM/L in the original sample.

Instrument Parameters



Rotate the burner to 90o to the optical axis of the spectrometer to improve the linearity, and use the 0.2 mM/L lithium working standard as the optimisation solution to set up the spectrometer.

Figure 1: Instrument parameters

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Results

Sample	Precinorm U (lot 3-504)	Precipath U (lot 150-458)
Lithium found (mM/L)	2.6	4.0
Reference value (mM/L)	2.8	3.9

The method of sample treatment described in this publication should be performed only by a competent chemist or technician trained in the use of safe techniques in analytical chemistry. Users should acquaint themselves with particular hazards which may be incurred when toxic materials are being analysed and handled in the instruments, and the instrument must be used in accordance with the operating and safety instructions given in the Operators manual.

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AN40161_E 03/08C