



## **D-Lactate** **July 2009**

The presence of D-Lactate (D-lactic acid) in the blood is a reflection of bacterial overgrowth in the gastro-intestinal tract. Raised D-lactate is a rare finding in humans, but a common problem among ruminants (veterinary surgeons recognise that D-lactate production in cows is potentially fatal). D-lactic acidosis in the human was first described in association with short bowel syndrome (post-operative bacterial overgrowth) [1].

D-lactate should not be confused with L-lactate, which is a normal product of anaerobic metabolism. Unlike the L-form, D-lactate is not metabolised by mammals and its elimination from the body depends mainly on renal excretion.

### **Indications**

D-lactate is produced from non-absorbed carbohydrates by colonic bacteria (which may also proliferate in the ileum). The absorption of large amounts of D-lactate can cause metabolic acidosis, altered mental status and a variety of other neurologic symptoms, in particular dysarthria and ataxia [2,3,4]. Its measurement is part of the differential diagnosis of chronic fatigue syndrome [5]. Although a temporal relationship has been described between elevations of plasma D-lactate and the accompanying encephalopathy, the exact neurological mechanisms remain undescribed [6].

Otherwise healthy children with gastroenteritis may also develop D-lactic acidosis.

There are a number of other tests of gastro-intestinal function available from Biolab – the gut fermentation test, the PEG profile (gut permeability), the measurement of plasma short-chain polypeptides and the lactulose breath hydrogen test. Each of these tests provides somewhat different information from the D-lactate test, which is specific for the presence of D-lactate-producing bacteria in the gut (probably *Enterococcus* and *Streptococcus* spp. [5]).

### **Patient preparation**

No special preparation is required and the patient can continue to take nutritional supplements and medication before the collection of the sample.

### **Specimen requirements**

Samples for this test must be collected at Biolab as the sample must be centrifuged and the plasma frozen immediately after collection.

### **Methodology**

D-lactate is measured by centrifugal analysis using the specific enzyme D-lactate dehydrogenase, which does not react with L-lactate [7].

**P.T.O.**

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**Turn around time:** 3-5 working days.

**Interpretation:** Unaffected subjects have plasma concentrations of D-lactate of less than 100µmol/L.

## References

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