

## **Lactose Tolerance Test**

### **Rationale:**

Intolerance to milk and other dairy products is caused by a deficiency in the enzyme lactase, which catalyzes the hydrolysis of lactose to glucose and galactose. By measuring glucose levels after a dose of lactose, lactase activity can be evaluated. In the lactose tolerance test, a 50 gram dose of lactose is taken orally by the patient, and blood levels are collected for up to 2 hours afterward to monitor the physiologic response.

### **Patient Preparation:**

The patient should have a glucose tolerance test prior to the lactose tolerance test to provide a comparison. The patient should be fasting overnight, refrain from caffeine and nicotine after midnight, and the test should be performed in the morning of the following day.

### **Materials:**

50 grams lactose dissolved in water (obtain from pharmacy)  
Grey-top (potassium oxalate/sodium fluoride) blood collection tubes

### **Procedure:**

1. During the test, the patient should refrain from caffeine, nicotine and physical activity.
2. From the pharmacy, obtain 50 g of lactose dissolved in water. For infants and children, a 15 g dose of lactose in 250 mL water is sufficient.
3. Collect a fasting glucose from the patient in a grey-top tube, gently invert the tube to mix the blood with the anticoagulant and send the tube to the laboratory promptly.
4. Administer the lactose to the patient.
5. Monitor the patient for abdominal cramping, bloating, gas, and diarrhea.
6. Collect blood in a grey-top blood collection tube at 30, 60, 90, and 120 minutes post dose. Send tubes to the laboratory promptly.

### **Reference Interval:**

Normal: peak glucose rise >20 mg/dL above the baseline level

Lactose intolerant: peak glucose rise <20 mg/dL above the baseline level, with symptoms

### **References:**

1. Clinical Chemistry Theory, Analysis, And Correlation, 3rd edition, L. Kaplan & A. Pesce, eds., Mosby Company, St. Louis, MO, 1996, pg. 584-5
2. Laboratory Handbook, 4th edition, D.S. Jacobs et al, eds., LexiComp, Cleveland, OH 1994, pg. 157-8