Lactate (LACT) – Plasma
Beckman UniCel DxC Systems

Technical Procedure 3137

Principle

Intended Use

Lactate (LACT) Reagent, when used in conjunction with UniCel® DxC 800 System(s) and SYNCHRON Systems Multi Calibrator, is intended for the quantitative determination of lactate concentration in plasma.

Clinical Significance

Lactate determinations are used in the diagnosis of lactate acidosis. Shock is the most widely recognized cause of lactic acidosis, although it is possible for elevated lactate levels to precede shock. Myocardial infarction, severe congestive heart failure, pulmonary edema and blood loss are the common causes of shock which will produce lactic acidosis. Lactic acidosis may also result from sepsis, renal failure and leukemia. Thiamine deficiency and diabetic ketoacidosis will usually result in increased levels of lactate.

Methodology

In the assay reaction, lactate oxidase (LOD) converts lactate to pyruvate with the concomitant generation of hydrogen peroxide (H_2O_2). The H_2O_2 formed reacts with a hydrogen donor and 4-aminoantipyrine (4-AAP) in a reaction catalyzed by peroxidase (POD) to form a chromophore. The lactic acid concentration is determined by measuring the absorbance due to the chromophore using an endpoint technique.

The SYNCHRON System(s) automatically proportions the appropriate sample and reagent volumes into a cuvette. The ratio used is one part sample to 100 parts reagent. The system monitors the change in absorbance at 560 nanometers. This change in absorbance is directly proportional to the concentration of lactic acid in the sample and is used by the System to calculate and express the lactate concentration.

Chemical Reaction Scheme

$$\text{L-Lactate} + O_2 \xrightarrow{\text{LACTATE OXIDASE}} \text{Pyruvate} + H_2O_2$$

$$H_2O_2 + \text{H-donor} + \text{4-aminoantipyrine}^+ \xrightarrow{\text{PEROXIDASE}} \text{Chromogen}^+ + 2H_2O$$

Specimen

Acceptable Sample Containers

13 x 75 Gray Top BD tubes
Gray Top Terumo micro-containers

Unacceptable Specimens

Whole blood, serum, urine and CSF are not recommended for use as a sample.

Plasma samples should be received in lab on wet ice within 15 minutes of collection, or be centrifuged and aliquotted before transport to lab on wet ice.

Refer to the *Procedural Notes* section of this chemistry information sheet for information on unacceptable specimens.

Type of Specimen

Freshly drawn plasma is the preferred specimen. Blood should be drawn without stasis because venous stasis may cause lactate elevation. Blood samples should be placed in an ice slush immediately and remain on ice prior to analysis.