台塑生醫科技股份有限公司
FORMOSA BIOMEDICAL TECHNOLOGY CORP.

AST(SGOT)TEST-Kinetic Method AST

FOR BECKMAN CX AND LX SYSTEMS

INTENDED USE

For the quantitative determination of aspartate aminotransferase activity in serum.

CLINICAL SIGNIFICANCE

Serum aspartate aminotrensferase (AST) catalyzes the transfer of the amino group from asparic acid to α -ketoglutaric acid. This enzyme is found in practically every tissue of the body, including red blood cells. It is in particularly high concentration in the liver, heart and skeletal muscles. Acute destruction of tissue results in the release of AST into the blood stream. Following myocardial infarction there is a significant increase in serum AST activity in about 6 to 8 hours with peak values reached after 48 to 60 hours, however, serum ALT activity remains within normal limits or only marginally increased. In hepatitis and other forms of liver disease associated with hepatic necrosis, both AST and ALT are elevated. Elevated levels of serum AST activity are also observed in infectious mononucleosis, muscular dystrophy, dermatomyositis, and in other forms of muscle and liver injury. The method presented here is an UV-Kinetic method based on the rate of NADH oxidation in a coupled malic dehydrogenase reaction.

PRINCIPLE

AST catalyzes the transfer of the amino group from L-aspartate to α-Ketoglutarate resulting in the formation of oxaloacetate and L-glutamate. The oxaloacetate thus formed is reduced to malate by malate dehydrogenase (MDH) with the concomitant oxidation of NADH to NAD. Oxidation of NADH caused a decrease in absorbance at 340 nm and the rate of decrease of absorbance is directly proportional to AST activity. The reaction formula is as follows:

AST

L-aspartate + α-ketoglutaric acid ⟶ oxalacetate + L-glutamate

MDH

Oxalacetate + NADH + H_+ ⟶ L-malate + NAD_+

SPECIMEN COLLECTION AND PREPARATION

Either serum or plasma may be used. The use of oxalate, citrate, EDTA, or heparin has shown no effect on AST values. Hemolysis must be avoided because of AST activity in red cells is 10~40 times that of plasma. The serum or plasma should be removed from the clot or cells without delay. AST is reported to be stable for 3 to 4 days at room temperature; 2 weeks when stored reirigerated at 2~8℃ and longer when frozen.

REAGENT

- Each kit contains 2 cartridge of AST reagent (2×200 tests)
- Ready-to-use
- Components : Tris: 100 mM; L-aspartate: 200 mM;

α-ketoglutarate: 12 mM; NADH: 0.23 mM;

MDH: 800 U/L; oxamic acid: 2 mM.

STORAGE: 2~8℃

PRECAUTIONS:

1. For in vitro diagnostic use only.

2. Since all specimens are potentially infectious, they should be handled with appropriate precautions and practices in accordance with Biosafety level 2 as recommended by USA NIH manual Biosafety in

Microbiological and Biomedical Laboratories, and in accordance with National or local regulations related to the safety precautions of such materials.

3. Each laboratory has to perform the quality control test to assure the results being reliable before running the specimen tests.

PROCEDURES: Use bar code reading to follow the Beckman CX4 parameters and procedures.

EXPECTED VALUE: up to 46μ/l.

NOTE: It is generally recommended that each laboratory establish its own range of normal values for commonly performed tests.

REFERENCES:

1. The Committee on Enzymes of the Scandinavian Society for Clinical Chemistry and Clinical Physiology.1974. Recommended methods for the determination of four enzymes in blood. Scand J. Clin. Lab. Invest. 32:291

2. Expert Panel on Enzymes of the Intemational Federation of Clin. Chem. 1976. Part 2. IFCC method for aspartate aminotransferase. Clin. Chem. Acts. 70: F19.

3. Ditte 1978: Part 3. Revised IFCC method for aspartate aminotransferase. Clin. Chem. 24:720.