

Determination of GPT (ALT) AND GOT (AST)

Alanine aminotransferase(ALT)

is an enzyme involved in the transfer of an amino group from the amino acid, alanine, to alpha-ketoglutaric acid to produce glutamate and pyruvate. ALT is located primarily in liver and kidney, with lesser amounts in heart and skeletal muscle. Increased ALT activity is more specific for liver damage than increased aspartate aminotransferase (AST) activity. ALT is seldom increased in patients with heart or muscle disease in the absence of liver involvement. In healthy children, plasma ALT activity is lower than AST until 15 to 20 years of age. Thereafter, plasma ALT activity tends to be higher than AST activity until age 60. The half-life of ALT in the circulation is 47 +/- 10 hours.

ALT activity in the liver is 3000 fold higher than in serum. Measurement of serum ALT activity is a good indicator of hepatocyte injury.

Aspartate aminotransferase (AST)

is an enzyme involved in the transfer of an amino group from aspartate to alpha ketoglutarate to produce oxaloacetic acid and glutamate. AST is present in most organs. The highest concentrations, listed in descending order, are found in liver, heart, skeletal muscle, kidney, brain, pancreas, lung, leukocytes, and erythrocytes. Because of its wide tissue distribution, elevated AST levels have low specificity for any single disease. AST activities in liver are 7000 times higher than serum activities. Historically, AST has been used clinically to diagnose hepatitis, myocardial infarction, and skeletal muscle disease. AST increase in the absence of ALT increase indicates cardiac or skeletal muscle disease. ALT is a better indicator of liver disease, because of its more limited tissue distribution.

AST tends to run slightly higher in males than females due to differences in body mass and varies with age. AST is slightly higher than ALT until the age of 15 to 20 years. Thereafter, AST activity tends to be lower than ALT. At age 60, AST and ALT activities become roughly equal. AST levels are about 15% higher in African American than Caucasian men. Obese men may have mildly elevated AST levels.

AST levels can fluctuate between 5 and 10% from one day to the next in the same individual. Moderate exercise increases AST levels for as long as 24 hours, usually less than 3 times the upper limit of normal. The half-life of AST in the circulation is 17 +/- 5 hours