SGPT (ALT) LYPHO

(UV - Kinetic IFCC without P5P Method)

Intended Use

GPT (ALT)is a reagent kit used for the determination of GPT (ALT)activity in serum or plasma based on enzymatic UV-Kinetic method.

Principle

α - Ketoglutarate reacts with L-alanine in presence of GPT (ALT) to form pyruvate and L-glutamate. The increase in pyruvate is determined in an indicator reaction catalyzed by lactate dehydrogenase. The conversion of NADH to NAD^+ at 340 nm is proportional to the activity of GPT (ALT) in serum/plasma and is determined kinetically as rate of decrease in absorbance.

$$\text{L - Alanine} + \alpha\text{ - Ketoglutarate} \xrightarrow{\text{GPT (ALT)}} \text{Pyruvate} + \text{L-Glutamate}$$

$$\text{Pyruvate} + \text{NADH} + H^+ \xrightarrow{\text{Lactate dehydrogenase}} \text{L-Lactate} + NAD^+$$

Reagents provided

1. R1 – Buffer Reagent
2. R2 – Enzyme Reagent

Working Reagent Preparation

Transfer exact volume of buffer mentioned on the label of dry powder vial. Swirl the reagent till the powder gets dissolved completely. Keep it for 10 minutes to stabilize before use.

Reagent storage and stability

Prior to use:

When stored between 2-8°C the individual reagents are stable until the expiration date stated on the bottle and kit box label.

Working Reagent:

The working reagent is stable for 30 days when stored capped at 2-8°C or 5 days at room temperature (18-25°C).

Indications of Reagent Deterioration:

- Turbidity;
- Working Reagent absorbance< 0.900 Abs at 340nm
- Failure to recover control values within the assigned range.

Specimen collection and preservation

Blood should be collected in a clean dry container. Although serum is preferred, plasma with heparin or EDTA can also be used. Samples with any visible haemolysis are not acceptable. GPT (ALT) activity in serum/plasma is stable for 1 week at 2° - 8°C and one month when stored at -20°C. The samples should be brought to room temperature prior to use.

Assay guidelines for Analyzers

Reaction type – Slope	UV Kinetic – Decreasing
Wavelength	340 nm
Flow Cell Temperature	37°C
Zero setting with	Distilled water
Delay time	60 seconds
Interval time	60 Seconds
No. of Readings	3
Sample volume	100 µl (0.1 ml)
Reagent volume	1000 µl (1.0 ml)
Factor	1746
Blank absorbance limit	≥ 0.900 Abs. against distilled water blank
Normal value	Up to 40 IU/L
Linearity	Up to 400 IU/L

NEL DIAGNOSTICS

Assay guidelines for Manual Procedure

Reagents	Test
Working Reagent	1000 µl (1.0 ml)
Sample	100 µl (0.1 ml)

1. Mix thoroughly and transfer the assay mixture immediately to the thermo stated cuvette and start the stop watch simultaneously.
2. Record the first reading at 60th second and subsequently 3 more readings with 60 seconds interval at 340 nm.

Calculation

Δ OD is the average difference in absorption between the second OD and the first OD and vise versa.
Serum GPT (ALT) (IU/L) = (Δ OD / Min) x 1746

Normal Range

Men : Up to 40 IU/L
Women : Up to 32 IU/L

Note: Expected range varies from population to population and each laboratory should establish its own normal range.

Limitations

- This method is linear up to 400 IU / L. If the activity exceeds, dilute the sample suitably with normal saline and repeat the assay. Apply proper dilution factor to calculate the final results.
- The working reagent is considered unsatisfactory and should not be used if the absorbance is less than 0.900 at 340 nm against distilled water blank.

Quality Control

To ensure adequate quality control measures, it is recommended that each batch should include a normal and an abnormal commercial reference control serum. It should be realized that the use of quality control material checks both instrument and reagent functions together. Factors which might affect the performance of this test include proper instrument function, temperature control, cleanliness of glassware and accuracy of pipetting.

References

1. Tietz, N.W, ed. Clinical Guide to Laboratory tests, 3 ed. Philadelphia, pa : W.B. Saunders, 1995:20-21.
2. Bergmmeyer, HU,Horder M,Rej R. Approved recommandation(1985) on IFCC methods for the measurment of catalytical concentration of enzymes, Part 3. IFCC method for alanine aminotransferase. J.Clin. Chem. Clin. Biochem. 1986 ; 24 :481-489.
3. Fischbach F, Zawta B. Age - dependant reference limits of several enzymes in plasma at different measuring temperatures. Clin. Lab. 1992 ; 38 :555 - 561.
4. Hafkensheild. J.C.M., *et. al.*, *J. Clin. Chem. Clin. Biochem.* 17, 219 (1979).

Symbols

IVD In Vitro Diagnostics. Caution. Keep away from sun light. Date of Manufacture.
LOT Batch No. Read Instructions. Fragile. Product Expiry Date.
CONT Content. Storage Temperature. Keep Dry. Manufactured By.
REF Catalogue No.

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