# AST :-

→ Location : found in the heart, lives, skeletal muscle, kidney

→ Isoenzymes :-

- Cytoplasmic
- Mitochondrial

→ It catalyze

Aspartate + α-kh $\underset{\text{P-5'-P}}{\overset{\text{AST}}{\rightleftharpoons}}$ Oxaloacetate + glutamate

## * Methods :-

### ① Dinitrophenylhydrazone method :-

Historical method

L- Aspartate + α-KG $\xrightarrow{AST}$ L-Glutamate + Oxaloacetate

Oxaloacetate + DNPH (hydrazin) ⟶

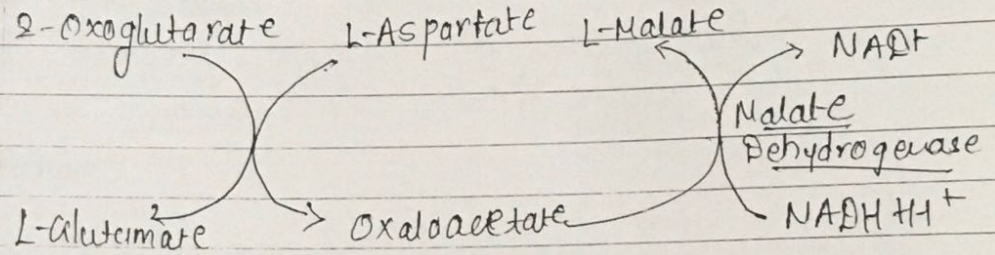
Oxaloacetate - DNP Hydroze

↓

(Blue coloured compound)

⟶ Absorbance at 505 nm is measured.

### ② Enzymatic Method :- (UV Monitoring)



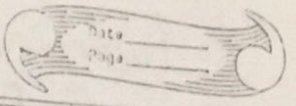

Aminotransferase reaction
(Formation of oxaloacetate)
Assay reaction

Dehydrogenase reaction
(Quantification of Oxaloacetate)
Indicator reaction

### ④ Enzymatic Leuco dye (visible) :- (Thin film procedure)

⟶ Aspartate + α-KG ⟶ Oxaloacetate + Glutamate

Oxaloacetate $\xrightarrow[\text{decarboxylase}]{\text{Oxaloacetate}}$ Pyruvate + $CO_2$



Pyruvate + phosphate + $O_2$ $\xrightarrow{\text{Pyruvate Oxidase}}$ $H_2O_2$ + Acetyl Phosphate

$H_2O_2$ + Leuco dye $\xrightarrow{\text{Peroxidase}}$ Coloured dye

* Reference Interval
* Method for separation and quantification of AST Isoenzymes :-

(a) Electrophoresis :-

- cytosolic AST → Anionic band
- Mt- AST → cationic band → usually below detection limit

(b) Immunoprecipitation :-

→ Ab directed against both isoenzyme

↓

So Low concentration of mt. AST can be measured

(c) Homogenous inhibition assay :-

↓

Use of proteinase K

↓

Selective proteolysis of cytosolic AST

↓

Permitting m-AST to be measured.

* Reference range :-

→ < 35 U/L

* Clinical Significance :-

→ ↑ AST in : Alcoholic hepatitis
Hepatic cirrhosis
Lives neoplasia
(↑ more than ALT)

→ Persistance of ALT ↑ for longer than 6 months after an episode of acute hepatitis is used to diagnose "chronic hepatitis".