

Lipase



- Hydrolase type enzyme
- Single chain glycoprotein
- LPS gene → int on chromosome 10
- LPS conc. is ~~high~~ about 5000 fold greater than other tissue & 20000 fold greater than serum
- LPS activity requires

↓
Bile salt

↓
colipase

- Because LPS only act on triacylglycerol on emulsified form

↓
secreted from pancreas

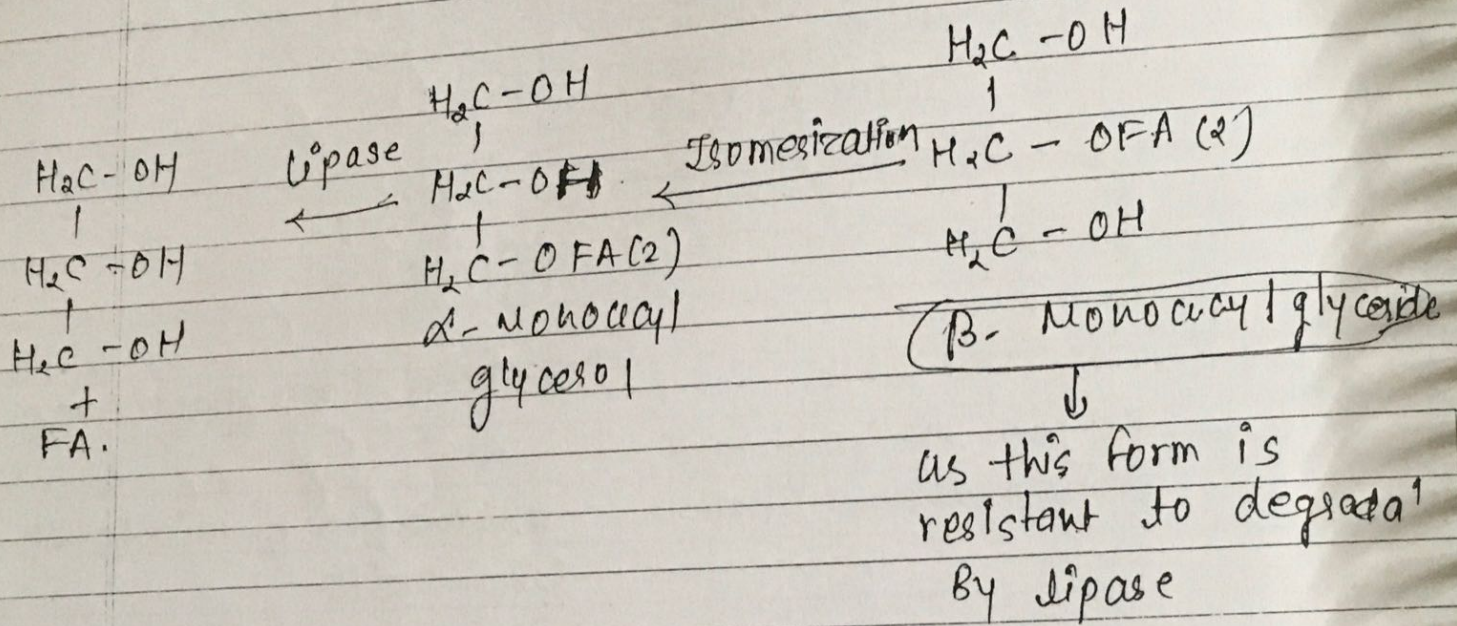
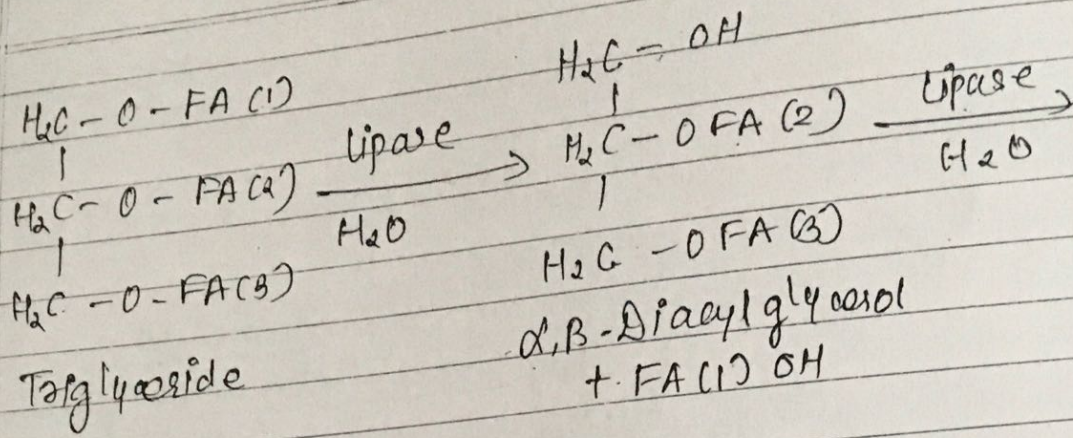
↓
attaches to a micelle or bile salts

↓
forms colipase-Bile salt complex

↓
Causes conformation changes of colipase

↓
exposes the site ϵ is of high affinity & high specificity for LPS

↓
So attracts LPS & anchor it to substrate surface



⇒ LPS mainly ~~not~~ in Pancrease, small amount may ~~be~~ ~~not~~ ~~is~~ secreted by gastric, pulmonary & intestine.

⇒ Isotforms of Pancreatic Lipase

⇒ Filtration: - small molecule filters from kidney → But almost all reabsorbed from it

So LPS not detected in urine usually

* Clinical Significance :-

① Acute Pancreatitis :-

→ highly sensitive & specific test

→

↑ in 4 to 8 hrs

↓

Peak at about 24 hrs

↓

↓ in 7 to 14 days.

→ elevations b/w 2 and 50 times the URL.

→ more sensitive & specific than S. Amylase.

↓

→ B'cz it ↑ more than S. Amy.

→ it remains elevated for more days than S. Amy.

→ it is mainly ↑ in pancreas.

→ ↑ in S. LPS activity is not necessarily proportional to severity of pancreatitis

② obstruction of pancreatic duct by a calculus or by Ca. of pancreas

③ Renal insufficiency

④ Congenital -nce of lipase may be there

↓

↳ cause fat malabsorpⁿ & severe steatorrhoea.

* Methods :-

(i) Titrimetric method :-

LPS catalyze Hydrolysis of FAs from an emulsion of olive oil / oleic acid

↓
FAs are liberated

↓
C is titrated by dilute alkali.

↓
Amount of alkali used is recorded as a function of time & serve as a measure of FA produced during reaction

(ii) Turbidimetric method :-

↓
LPS catalyze the hydrolysis of FA from an emulsion of oleic acid

↓
Causes ↓ in turbidity of reaction mixture

↓
Absorbance at 340 nm is read & $\Delta A/\text{min}$ is taken as measure of LPS Activity.

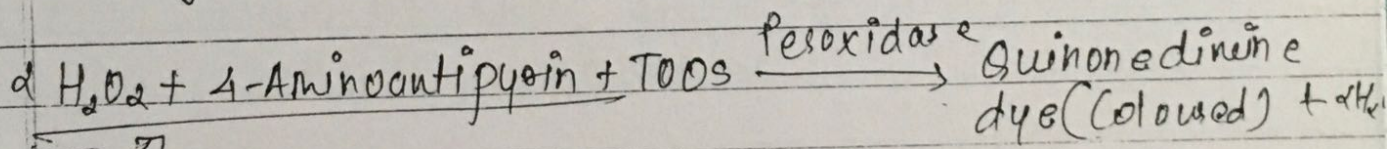
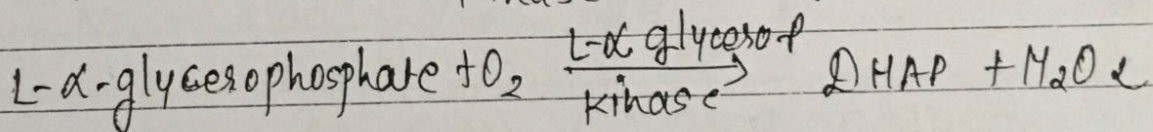
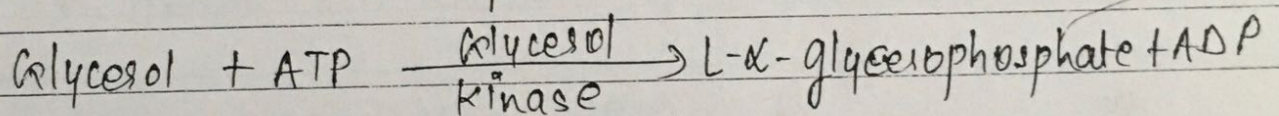
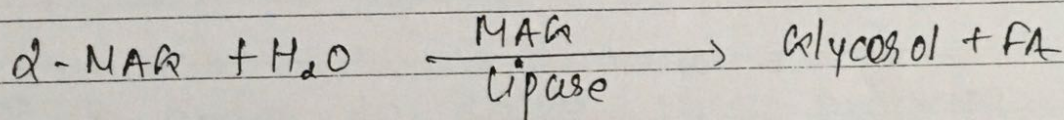
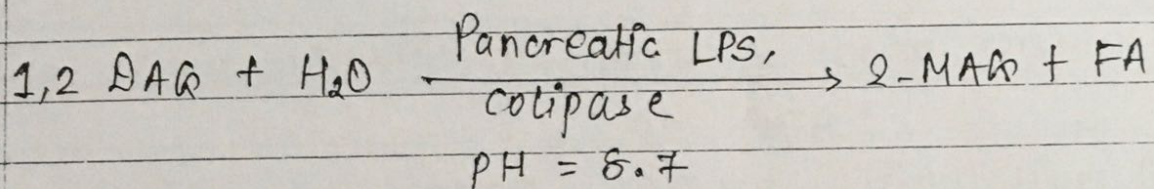
→ ~~it~~ Sometime rather ^{than} ↓ in absorbance, ↑ in absorbance occurs.

↓
due to the of RA Factor ?

③ Spectrophotometric methods :-

① Diglycoside Assay :-

↓
Sequence of auxillary ^{enzymes} & indicators are used.



↑
Trinder reaction

↓
measured at 550 nm

② Some synthetic substrate can be used
is generate ↓

↳ produces bluish-purple chromophore

↓
absorbance measured at 550 nm

↓
more specific for pancreatic lipase.

⇒ Stable at room temp. for 1 wk.