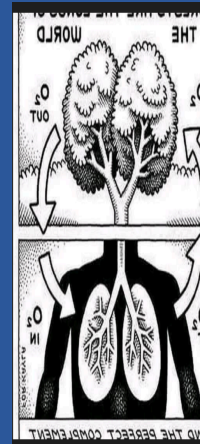


# INTRODUCTION TO MEDICAL LABORATORY

Professional Medical Laboratory school  
Yasinh629@gmail.com



## Lesson 24

### Lipase test

#### Overview

A lipase is a water-soluble enzyme that catalyzes the hydrolysis of ester bonds in water insoluble, lipid substrates.

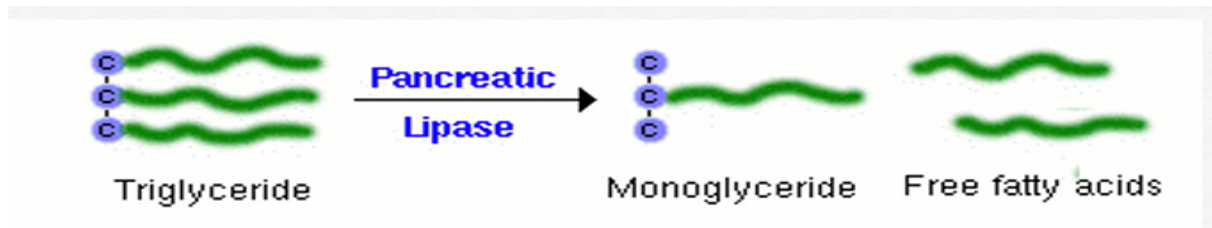
Lipases perform essential roles in the digestion, transport and processing of dietary lipids such as triglycerides.

#### Human lipases

The main lipases of the human digestive system are human pancreatic lipase (HPL) which are secreted by the pancreas. Humans also have several other related enzymes, including hepatic lipase (HL), endothelial lipase, and lipoprotein lipase. Not all of these lipase's function in the gut

#### Function

A major component of dietary fat is triglyceride, or neutral lipid. A triglyceride molecule cannot be directly absorbed across the intestinal mucosa. Rather, it must first be digested into a 2 monoglyceride and two free fatty acids. The enzyme that performs this hydrolysis is pancreatic lipase, which is delivered into the lumen of the gut as a constituent of pancreatic juice. Sufficient quantities of bile salts must also be present in the lumen of the intestine in order for lipase to efficiently digest dietary triglyceride and for the resulting fatty acids and monoglyceride to be absorbed.



### Note:

Pancreatic lipase has recently been in the limelight as a target for management of obesity. The drug orlistat (Xenical) is a pancreatic lipase inhibitor that interferes with digestion of triglyceride and thereby reduces absorption of dietary fat.

Sample Serum is the specimen of choice for blood lipase assays.

**Note:** Serum lipase is stable up to 1 week at room temperature and may be kept stable longer if it is refrigerated or frozen.

### Interfering Factors

- EDTA anticoagulant interferes with test.
- Lipase is increased in about 50% of patients with chronic renal failure.
- Lipase increases in patients undergoing hemodialysis.

### Normal level

Adults: 0-160 U/L

### Results interpretation

#### Acute pancreatitis

In acute pancreatitis, Lipase in the blood often start to increase within 4-8 h of injury to the pancreas, peaks 24 h (increases to 5 to 10 times higher than the highest reference value) then return to normal 8-14 days.

Note: In acute pancreatitis, elevated amylase levels usually parallel lipase concentrations, although lipase levels may take a bit longer to rise than blood amylase levels and will remain elevated longer.

**Note:** Increased lipase activity rarely lasts longer than 14 days, and prolonged increases suggest a poor prognosis

#### Chronic pancreatitis

Lipase elevated but normal or marginal activity is seen because destruction of pancreatic cells in the late-stage results in the reduction of the amount of enzyme that enter the serum

### **limitation**

Although determination of serum lipase has diagnostic advantages over serum amylase for acute pancreatitis, it is not specific for acute pancreatitis. Serum lipase may also be elevated in nonpancreatic conditions including renal diseases, various abdominal diseases such as cholecystitis, intestinal obstruction, duodenal ulcer, and liver disease, as well as alcoholism, and diabetic ketoacidosis.