

Instructional Objectives / Learning Outcomes
DMP 775, Veterinary Clinical Pathology
Department of Diagnostic Medicine/Pathobiology
College of Veterinary Medicine, Kansas State University

Chapter 12: Enzymes

235. If given appropriate values for serum enzyme activities (e.g., ALT, AST, LD, ID, ALP, GGT, CK, AMS, LPS) and other supportive information or laboratory data,
 - a. List or classify abnormalities using appropriate terms.
 - b. Propose appropriate ideas or conclusions (i.e., diseases, syndromes, or pathologic states) that might cause the defined abnormalities.
 - c. Based on your conclusions or ideas, explain the pathogenesis of each defined abnormality if the abnormality could be caused by the disorder.
236. List and recognize the major cellular sources of the common serum enzymes.
237. State and recognize the major mechanisms that lead to increased activities of each of the common serum enzymes.
238. Explain the three basic pathophysiologic mechanisms that lead to increased serum enzyme activity.
239. Explain and recognize how a serum enzyme's half-life influences our interpretation of laboratory data from one serum sample.
240. Explain why a serum ALT value that is 10xURL may be due to reversible or irreversible hepatocyte damage.
241. Explain how the analytical methods for serum enzymes are different from most of the clinical chemistry assays we have discussed to date (hint: what is measured?).
242. Recognize and state how different assay conditions (pH, substrate, temperature) affect enzymatic assay results.
243. Explain why it is typically best that serum enzyme activity be measured in a fresh and not stored sample.
244. Explain why a serum ALP activity that is 2xURL may actually be a 10-fold increase for that animal.
245. For each of the following serum enzymes, state the major tissue sources of the enzyme and the major mechanisms or processes that lead to increased serum enzyme activity.
 - a. ALT in dogs and cats
 - b. AST in domestic animals
 - c. LD in domestic animals
 - d. ID in domestic animals
 - e. ALP in dogs and cats
 - f. GGT in domestic animals
 - g. CK in domestic animals
 - h. AMS & LPS in dogs
246. Compare and contrast the processes in dogs that produce increased serum ALP activity in cholestasis, after steroid treatments, and after phenobarbital treatments.
247. Explain and recognize the diagnostic differences between total serum lipase activity and pancreatic lipase immunoreactivity (not in FVCP).
248. Extra credit
 - a. GGT activity in urine (p 451-2)
 - b. Other serum enzymes (p. 456)