

Glucose Porphyrin and Liver Function Questions

1. Please explain the source and function of the three pancreatic hormones that regulate blood glucose levels.
2. In your own words, define the following processes and describe its impact on circulating glucose levels:

Glycogenesis-

Gluconeogenesis-

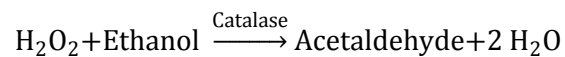
Glycolysis-

Lipogenesis-

Glycogenolysis-

Lipolysis-

3. When using hexokinase methods and a polarographic electrode the manufacturers include secondary reactions like the following



Why is this necessary? What is the consequence of not including this reaction?

4. Please diagnose the following patient:
Glucose 1139 mg/dL Na 121 mmol/L K 2.4 mmol/L C-Peptide 1.7 ng/mL (0.8-3.2)
5. Please diagnose the following person based on their OGTT for gestational diabetes
FBS 83 mg/dL
1hr 175 mg/dL

2hr 168 mg/dL

6. Assess the following Hgb A1c % with regards to glucose control

4.8%

6.0%

6.6%

8.2%

12.5%

7. The lysosomal storage disease known as MPS II is also known as _____

8. The enzyme responsible for conjugating bilirubin is _____.
The conjugation of bilirubin involves adding what compound to it?

9. Most of the bilirubin taken to the liver will leave the body through this pathway? (describe pathway)

10. What is δ -bilirubin? How does it show up during bilirubin testing?

11. Please categorize the type of jaundice caused by the following conditions:

Wilson's disease-

HDN-

Pancreatitis-

Crigler-Najjar-

Hepatitis-

Gallstones-

12. Similar to Crigler-Najjar syndrome (while not as severe) this condition can lead to sporadic appearance of jaundice:
13. The enzymes _____ and _____ are often elevated in cases of obstructed bile ducts. For this reason they are known as “inducible enzymes.”
14. Please diagnose an individual with the following lab results:
T.Bil: 8.5 mg/dL
D.Bil: 1.1 mg/dL
U.Bil:???

- ALKP: 95 U/L (36-108)
ALT: 48 U/L (10-54)
AST: 25 U/L (14-40)
GGT: 85 U/L (10-70)
15. Please diagnose an individual with the following lab results:
T.Bil: 6.5 mg/dL
D.Bil: 4.1 mg/dL
U.Bil:???

- ALKP: 287 U/L (36-108)
ALT: 34 U/L (10-54)
AST: 39 U/L (14-40)
GGT: 94 U/L (10-70)
16. Please diagnose an individual with the following lab results:
T.Bil: 7.5 mg/dL
D.Bil: 0.1 mg/dL
U.Bil:???

- ALKP: 46 U/L (36-108)
ALT: 1563 U/L (10-54)
AST: 821 U/L (14-40)
GGT: 41 U/L (10-70)
17. Most of the bilirubin (or bilirubin metabolites) excreted by the kidneys is in what form? How did it get there?

18. The most common 2^o porphyria is_____

19. Please diagnose an individual with the following lab results:

Urine: ↑↑ URO

Blood: ↑↑ URO

20. Please diagnose an individual with the following lab results:

Urine: ↑ URO ↑ALA

Blood: Norm URO Norm ALA

21. Please write out the rate-controlling step of heme synthesis:

22. The single most common porphyria is? The most common *inherited* porphyria is?

23. Only two porphyrias result in RBCs with increased protoporphyrins, and 3 with increased ZPP, what are they? Are there any in common?