Disorders of Carbohydrate and Fat Metabolism

Energy metabolism

1. What does the presence of glucose in urine tell you about blood glucose concentration?

Absorptive phase

1. What is the role of insulin in the way the body handles absorbed carbohydrates, amino acids, and fats following ingestion of a meal?
2. What is the fate of glucose, amino acids, and fats absorbed following ingestion of a meal?

Postabsorptive phase

1. What is the role of liver and muscle glycogen during fasting?
2. How do amino acids contribute to glucose homeostasis?
3. How does lipid stored in adipose tissue contribute to glucose homeostasis?
4. Which hormones regulate the processing outlined in questions 1–3?

Ruminant energy metabolism

1. How do ruminants make blood glucose? What are the major substrates derived from the diet?
2. Which action requires the most blood glucose in a cow: maintenance, fetal development, or lactation?

Ketosis

1. Is production of ketones from fatty acids bad for the cow? Explain.
2. What is the basic problem causing classical ketosis, as seen in grazing dairy cattle?
3. What is the basic problem causing ketosis in the periparturient cow fed a high-grain diet?
4. Is there a difference in how you would treat the cow with classical versus periparturient ketosis?

Pregnancy toxemia

1. Why are ewes carrying twins more susceptible to pregnancy toxemia than ewes carrying a single lamb?

Fatty liver syndrome in poultry

1. Is fatty liver in birds a sequela of excess dietary energy or lack of dietary energy?

Diabetes mellitus

1. Define insulin deficiency in relation to type I and type II diabetes mellitus.
2. What is meant by exhaustion of the β cells of the pancreatic islets?

Neonatal hypoglycemia

1. Why is it critical for newborn mammals to nurse shortly after birth?