

Ruminant Digestion

A Closer Look

Goal: To Understand the basics of Ruminant Digestive Systems

Objectives: To identify basic structures Associated with Ruminant Digestive Systems.

To Understand Prehension, Mastication and Rumination

To Understand the Process of Digestion and Absorption

Section 1 Overview of Digestive Tract and Anatomy – Review Questions

1. Which of the following terms refers to the part of a structure closest to the belly?
 - a. Anterior
 - b. Posterior
 - c. Ventral
 - d. Dorsal
2. Which of the following structures is considered to be the true stomach in ruminants?
 - a. Rumen
 - b. Reticulum
 - c. Omasum
 - d. Abomasum

3. What man-made physical object is placed into the side of live cattle so scientists can access the rumen to study the contents during digestion?
 - a. Appendix
 - b. Rectum
 - c. Cannula
 - d. Laparoscope
4. Which of the following animals are considered ruminants?
 - a. Cattle
 - b. Sheep
 - c. Deer
 - d. All of the above
5. What component is considered the first “stomach” of the ruminant?
 - a. Rumen
 - b. Reticulum
 - c. Omasum
 - d. Abomasum

Section 2. Prehension, Salivation and Rumination

1. Which of the following is not present in ruminants?
 - a. Upper incisors
 - b. Lower incisors
 - c. Dental pad
 - d. Premolars
2. How many liters of saliva can a steer produce in a day?
 - a. 10 liters
 - b. 25 liters
 - c. 50 liters
 - d. 100 liters

3. Which of the following is not abundantly present in saliva?
 - a. Water
 - b. Minerals
 - c. Digestive enzymes
 - d. All of the above
4. Ruminants chew food:
 - a. Using molars and premolars
 - b. On one side of the jaw and then the other
 - c. That has already been swallowed and then brought back through the esophagus
 - d. All of the above
5. On average, how much time per day do ruminants spend grazing?
 - a. Six hours
 - b. 8 hours
 - c. 10 hours
 - d. 4 hours

Section 3. Rumen and Reticulum

1. The honeycomb refers to what structure?
 - a. Rumen
 - b. Reticulum
 - c. Omasum
 - d. Abomasum
2. It is not uncommon to find what objects in the reticulum?
 - a. Wire
 - b. Bolts
 - c. Nuts
 - d. All of the above

3. What is the normal capacity of a rumen in an 1100-pound steer?
 - a. 20 gallons
 - b. 60 gallons
 - c. 10 gallons
 - d. 30 gallons
4. In the rumen which portion would have the most papillae?
 - a. Dorsal
 - b. Ventral
 - c. Anterior
 - d. Posterior
5. Why are magnets administered to cattle?
 - a. To add weight
 - b. To catch wire and bolts
 - c. To help circulation
 - d. To speed digestion

Section 4. Omasum, Abomasum and lower digestive tract

1. What structure governs the passage of food material from the abomasum to the small intestine?
 - a. Pylorus or the pyloric valve
 - b. Omasum
 - c. Cecum
 - d. Large intestine
2. The leaves of the Bible are associated with what structure?
 - a. Rumen
 - b. Reticulum
 - c. Omasum
 - d. Abomasum

3. Which of the following make up the small intestine?
 - a. Duodenum
 - b. Ileum
 - c. Jejunum
 - d. All of the above
4. In the abomasum which portion secretes mucus?
 - a. Anterior
 - b. Posterior
 - c. Dorsal
 - d. Ventral
5. What is the function of the omasum?
 - a. To prevent large particles from going forward
 - b. To add water to the material
 - c. To absorb water
 - d. Both A+C

Final Review Questions:

1. From which organ or specific organ area was this tissue sample taken?
 1. Esophagus
 2. Rumen
 3. Omasum
2. From which organ or specific organ area was this tissue sample taken?
 1. Abomasum
 2. Gallbladder
 3. Rumen
3. From which organ or specific organ area was this tissue sample taken?
 1. Rumen
 2. Reticulum
 3. Small intestine

4. From which organ or specific organ area was this tissue taken?
 1. Pylorus
 2. Reticulum
 3. Cecum
5. From which organ or specific organ area was this tissue sample taken?
 1. Incisors
 2. Omasum
 3. Ileum
6. From which organ or specific organ area was this tissue sample taken?
 1. Jejunum
 2. Abomasum
 3. Tongue
7. From which organ or specific organ area was this tissue sample taken?
 1. Small intestine
 2. Large intestine
 3. Proximal colon
8. From which organ or specific organ area was this tissue sample taken?
 1. Lips
 2. Cecum
 3. Omasum
9. From which organ or specific organ area was this tissue sample taken?
 1. Small intestine
 2. Duodenum
 3. Large intestine
10. From which organ or specific organ area was this tissue sample taken?
 1. Abomasum
 2. Omasum
 3. Pyloric valve
11. Which ruminant is least selective in its grazing habits?
 1. Goat
 2. Cow
 3. Sheep
 4. Both A+B

12. In ruminants what digestive structure is the “blind sack” that follows the small intestine?

1. Esophagus
2. Cecum
3. Pylorus
4. Abomasum

13. The esophagus enters into the:

1. Rumen and Omasum
2. Rumen and reticulum
3. Reticulum and abomasums
4. Abomasum and omasum

14. Ruminants spend the majority of their time:

1. In jaw movement activity
2. Sleeping
3. Eating
4. Ruminating

15. What do cattle use to bring forage into their mouth?

1. Lips
2. Tongue
3. Teeth
4. Eyes

16. Why is saliva important?

1. Aids in digestion
2. Adds moisture
3. Keeps the esophagus healthy
4. All of the above

17. In the abomasums which portion secretes acid?

1. Anterior
2. Posterior
3. Dorsal
4. Ventral

18. Which of the following terms refers to the rear of the animal?

1. Anterior
2. Posterior
3. Dorsal
4. Ventral

19. The cecum is comparable to what organ in humans?

1. Appendix
2. Gall bladder
3. Stomach
4. Liver

20. Why are goats and sheep able to be more selective in their grazing habits?

1. They have mobile lips
2. They have a narrow muzzle width
3. They have a wide muzzle
4. Both A+B