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Website:

Lecture title: Digestive system in ruminant

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Summary: Ruminants stomach have four compartments, the rumen ,the reticulum, the omasum ,and the abomasum .each parts have special function for digestion of feeds, Rumen microbes ferment feed and produce volatile fatty acid and gases. Which is the cows main source of energy.

Ruminant stomachs have four compartments: the rumen, the reticulum, the omasum and the abomasum. Rumen microbes ferment feed and produce volatile fatty acids

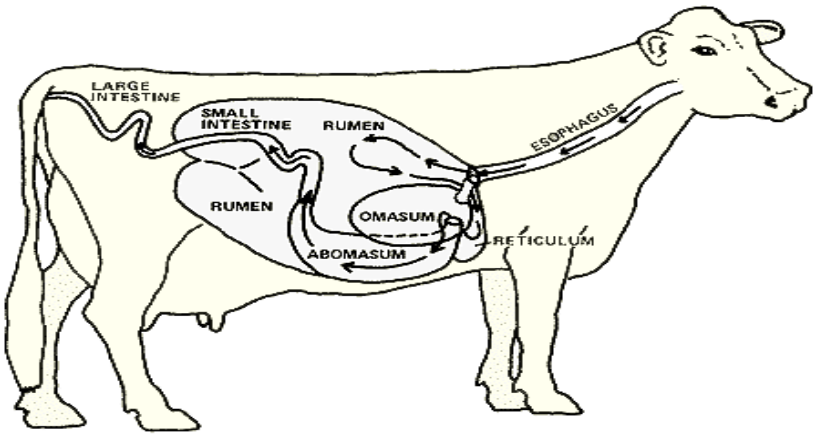
The ruminant stomach (compound stomach) divided in to four division:

1-Rumen

2-Reticulum

3-Omasum

4-Abomasum



The Rumen

The rumen is the largest compartment of the ruminant stomach – it can store up to 50 gallons of digested materials. Food is fermented in the rumen, because the environment is anaerobic (has no oxygen). That allows for increased microbial action and high concentrations of bacteria (“rumen bugs”). The rumen is capable of changing poor-quality protein (such as the nitrogen in grass) to a good-quality microbial protein. The rumen has fingerlike projections called “papillae” that

increase the surface area on which microorganisms do their work. When a cow eructates (belches), it's releasing fermentation gas (mostly carbon dioxide and methane).

The Reticulum (Honeycomb)

The reticulum is attached to the rumen and consists of bands of smooth muscle. The walls of the reticulum look like honeycombs, which give it the nickname "the honeycomb." Its main functions are to first detect large feed particles that need to be broken down further, and second to regurgitate or force those particles back up the esophagus to the mouth so they can be chewed and then swallowed again. Cows have an unfortunate habit of accidentally ingesting hardware such as nails and bailing wire. These foreign objects usually wind up in the reticulum and sometimes have to be surgically removed.

The Omasum

Many folds or layers of muscle (called “plies”) make up the omasum .These folds increase the compartment’s surface area, which helps it absorb nutrients from feed and water. The omasum squeezes water from the feed particles and continues to break them down into smaller particles.

The Abomasum (True Stomach)

The abomasum is called the “true stomach” because it’s the equivalent of the stomach of a monogastric animal. This is where acids and enzymes (digestive juices) mix with and prepare feed for enzyme breakdown and absorption in the small intestine. It has a very low (acidic) pH. This is the feed’s last stop before entering the small intestine where most nutrient absorption will take place

Development of rumen

Newborn rumen is nonfunctional, sterile, Small and lack papillae. -Reticular groove shunts milk from esophagus to abomasum.

-Rumen developed by:

1-exposure to environment

2- Consumption of solid feed.

3- Consumption of water.