ABSTRACT: A nasoabomasum probe provided with a hollow elastic hose having a flexible tube mounted inside thereof capable of longitudinal displacement and carrying an elastic inflatable bulb overlapping the remote end portion of said tube, the other end of the tube being connected to a device for inflating said bulb.
NASOGASTRIC SUCTION PUMP

This invention relates to veterinary medicine and in particular it relates to a probe for pumping out the contents of the abomasum in ruminants by applying the noninflatable method as well as for introducing medicinal substances immediately thereto.

Use is made or probing in treatment of animals with affected gastrointestinal tract. This procedure, however, has proved to be successful only when applied for treatment of animals having an unilocular stomach. In cases where ruminants are involved, use has hitherto been made of gastric probes already known in the art which can be employed for penetrating only into the rumen and the reticulum. This to a great extent lowers the effect of treatment since no possibility is provided for obtaining objective data on how the abomasum functions nor can its function be restored to a normal level by introducing the appropriate medicinal substances immediately into the abomasum.

As it can be seen from the above said, the secretory function of the abomasum is examined heretofore solely through fistulation of test animals and not in clinical practice.

It is therefore the primary object of this invention to eliminate the aforesaid disadvantages of the known probes.

It is a further and more specific object of this invention to provide a probe and a method of its application whereby the probe can penetrate through the nasal passage into the esophagus wherefrom it can be directed optionally either to the abomasum or to the rumen of the animal. This is accomplished by providing an elastic inflatable bulb secured at the inlet end of a flexible tube whereas the other end of said tube communicates with a means for inflating said bulb in the capacity of which an injection syringe can be used.

Other objects and advantages of the invention will become apparent from the following description and the accompanying drawing the sole figure of which is an elevation view partly in section of the nasogastric probe of the present invention.

Referring to the drawing, said probe comprises an elastic hose 1 and a flexible tube 2 capable of being inserted therein-to, the inlet end of said flexible tube carrying an elastic inflatable bulb 3 made fast thereto whereas the other end of said tube communicates with an injection syringe 4. To facilitate inserting of the flexible tube 2 along with the bulb 3 into the elastic hose 1, said bulb is fitted onto said flexible tube somewhat away from its edge and is then fastened thereto.

The rear end of the flexible tube 2 communicates via a two-way valve 5 with the syringe 4 and a tube 6, the latter being intended to communicate with either a Marey's capsule or a pressure gauge (not shown in the drawing).

A ring 7 fits loosely on the hose 1.

To bring the probe in operative position, the flexible tube 2 with the bulb 3 and the syringe 4 joined thereto, is inserted into the elastic hose 1 of the probe so that the end of the tube 2 carrying the bulb 3 is somewhat extended from the hose 1 and locked in that position with a clamp 8.

The scale of the syringe 4 indicates the amount of air filling the elastic bulb 3. When the bulb 3 increases its volume so as to exceed the diameter of the elastic hose 1, the probe end takes the form of an elastic olive which facilitates the progressing of the probe through the nasal passages into the esophagus and further on through the omasum canal to the abomasum. An increase of the elastic bulb 3 to the size of an alimentary bolus when the probe end reaches the pharynx causes the animal to swallow the probe whereby the latter penetrates into the esophagus. The fact that the volume of the elastic bulb 3 is increased through inflation enables the probe while passing through the esophagus to be directed to the rumen.

After the probe has been introduced into the abomasum, the flexible tube 2 carrying the elastic bulb 3 is pulled through the hose, whereby the contents of the abomasum are drawn off, this action being based on the suction principle.

The present method of introduction of the probe is based upon the biological features peculiar to ruminants and resides in that when the probe is introduced into the abomasum of an animal, the reflex closing of the esophagus occurs after the sensory receptors located in the oral cavity and the pharynx have been irritated by food stimuli.

After the animal to be treated has been fixed in place, the necessary length of the probe is found by way of measuring the distance from the animal's nostril to the point of intersection of the costal arch with the horizontal line produced from the patella, whereupon the ring 7 is set to the length found.

Further, the volume of the elastic bulb 3 is increased through inflation so that it becomes larger than the outer diameter of the elastic hose 1. Then the probe is introduced through the lower nasal passage of the animal. When the inlet end of the probe reaches the pharynx, the volume of the elastic bulb 3 is increased once more so as to assume the size of an alimentary tube whereupon the animal performs swallowing movements and the probe penetrates into the esophagus. When the probe progresses down the esophagus the volume of the elastic bulb 3 is reduced. The further movement of the probe is discontinued before it reaches the vestibulum of the rumen. Juvenile animals are given a nipple drinker filled with milk which is introduced into their oral cavity. As to the adult animals, some food stimuli are introduced perorally through a slender rubber tube into the buccal space. After the animal has made two or three swallows, the probe is advanced further until reaching the preset mark (the ring 7) on the elastic hose 1, the food stimuli being introduced continuously into the buccal space. Thereupon the flexible tube 2 with the bulb is pulled out from the hose, the contents of the abomasum are drawn off and the appropriate curing manipulations are carried out.

As the food stimulus for juvenile animals use is made of milk whereas for adult animals solutions of some substances capable of stimulating the gustatory analyzers, located in the animal's oral cavity and the pharynx, can be used for the purpose, such as 25 percent solutions of sodium sulfate and magnesium sulfate, 10 percent solutions of sodium chloride or sugar, and the like.

Application of the nasogastric probe of the present invention makes it possible to obtain the contents of the abomasum without fistulation of the animal as well as to investigate the secretory function of the abomasum by using the fractionation method. The probe allows the introduction of drugs immediately into the abomasum, makes possible irrigation of the abomasum as well as recording of its functional characteristics.

We claim:

1. A nasogastric probe comprising an elastic hose with an inner passage; a hollow flexible tube disposed with clearance in the passage of said elastic hose such that the tube can be displaced longitudinally inside the passage of said hose; an elastic inflatable bulb secured to said flexible tube and overlapping the remote end portion of the latter; and means for inflating said bulb connected to the nearest end portion of said flexible tube; said elastic bulb when inflated extending from said hose and having a size providing for a closure of the clearance between said flexible tube and the hose when the probe is being introduced, said flexible tube having a portion extending from the hose to the inflating means, and clamp means fitted on said portion of the flexible tube which extends from the hose and engaging the hose at the end face thereof for preventing the flexible tube from being pulled out of the hose in the course of probe introduction.

2. A probe as claimed in claim 1 comprising a ring on said elastic hose adjustable lengthwise thereof for limiting the depth of insertion of the probe.