

## A TECHNIQUE FOR THE COLLECTION OF URINE FROM COWS

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Receipt of MS 22.4.74.

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A balance study with dairy cows requires *inter alia* the quantitative collection of urine. In a trial conducted at the Agricultural Research Institute, Glen, use was made of the standard FG 26-150 ml Lapro-foley catheter (Latex Products, Johannesburg). This catheter is standard equipment in hospitals. The different components of such a catheter are shown in Fig. 1.

The vulva is opened with a speculum and the catheter inserted by guiding the point at an upward angle through the external urethral orifice, by means of a long firm guiding wire (460 mm) which fits into the catheter via the urethra into the bladder. The external urethral orifice is about 10 cm from the ventral point of the vulva opening and has the form of a longitudinal slit about 2,5 cm long. Beneath this is a blind pouch, the suburethral diverticulum which is about 3,5 cm long (Fig. 2). If the catheter is guided in a downward position it will enter the blind pouch. When guided into the correct orifice the catheter will glide in smoothly along the urethra.

By means of a syringe without a needle, 70-80 ml sterile water is injected through the built-in valve in the catheter causing an inflation of the balloon. The guiding wire is removed after inflating the balloon. The inflated balloon ensures that the front portion of the catheter remains inside the bladder. Cows provided with smaller types of catheters (30 ml) or large catheters having been injected with less than 70 ml water, were inclined to lose the catheters.

A latex medical tube, two metres in length, with an inner diameter of 5 mm and 3 mm wall thickness, functioned as a connecting tube between the catheter and urine container. The tube leading to the "urine container" should form a U-bend so that a small amount of urine remains in it to prevent air aspiration into the bladder. Containers with a 22 l capacity were used. Continuous flow of urine from the bladder into the urine container occurs. Before removal of the catheter a bladder rinse, consisting of 20 ml antibiotic solution, was injected into the bladder via the catheter tube to prevent possible infection. The antibiotic solution con-

sisted of 10 ml antibioticum (200 units procaine penicillin and dihydro-streptomycin (as sulphate) 0,25g per ml) and 10 ml salt solution (5g sodium chloride per 470 ml sterile water).

The balloon is deflated by inserting a syringe needle through the built-in valve thus causing the water in the balloon to flow out. The catheter is then removed. After

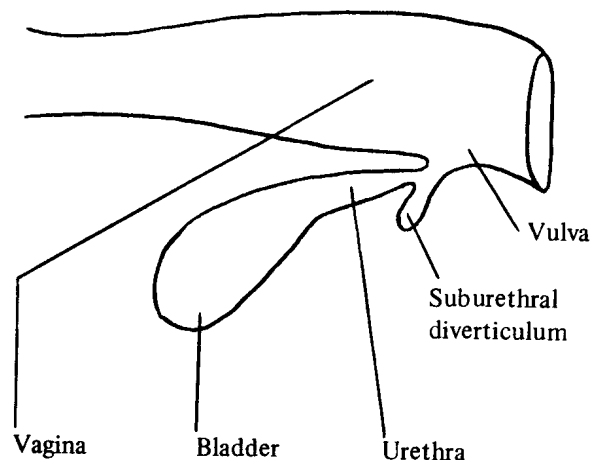


Fig.2 Diagrammatic sketch of a part of the urogenital tract of cow

the removal of the catheter, each cow received a daily intramuscular injection of 20 ml antibioticum over a period of four days as a preventative measure against possible infection.

In all cases (48 in total) the total urine content was collected. No leakage occurred between the catheter and the bladder of the cow. Catheters were left in the bladders for periods of 10 days. During this period the cows showed no appreciable signs of irritation or decline in milk production or daily feed intake. Up to 32 l urine was collected daily per cow. The urine was preserved using 20 ml of a solution consisting of 4N H<sub>2</sub>SO<sub>4</sub> in which 9% Cu SO<sub>4</sub> was dissolved, per 1 urine. A urine sample (1%) was taken daily from each cow.

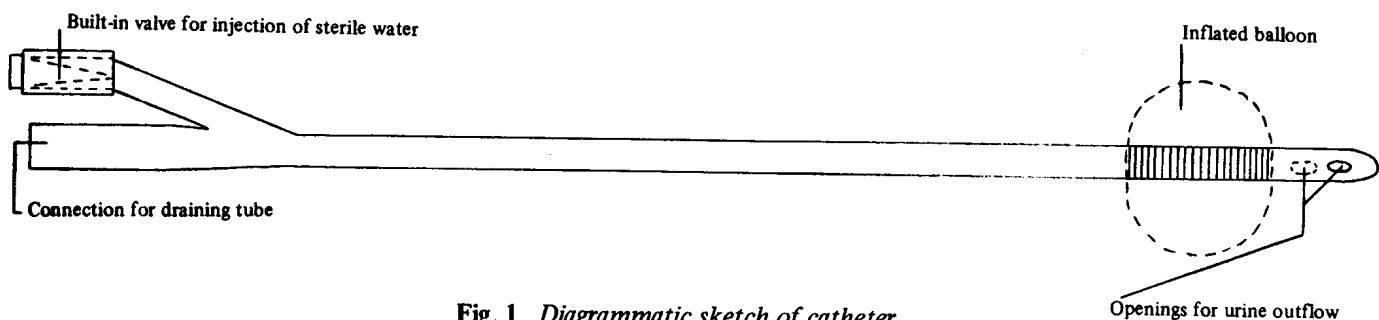


Fig. 1 Diagrammatic sketch of catheter