TECHNICAL NOTES

A Modification of an Esophageal Fistula Plug That Allows Low Maintenance of Free-ranging Sheep and Goats

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Abstract

A low cost plug constructed from polyethylene is described which reduces the maintenance problems associated with esophageally fistulated grazing animals.

The esophageal fistula offers a practical means of obtaining samples of the diet selected by grazing ruminants. Split rubber plugs (McManus et al. 1962) are commonly used in Australia to close the fistula. Under range conditions this plug pulls out relatively easily when caught in fences, shrubs or as a result of the animal scratching its neck with its rear hooves. In addition, if the animal is grazing dry fibrous forage or browse, the ingesta can become impacted around the plug, completely blocking the esophagus. If not rectified quickly, morbidity or death can occur from thirst, starvation or loss of saliva. Consequently esophageally fistulated animals need to be inspected at least three times per week which is unsatisfactory, especially if they are located at remote sites.

In order to establish esophageal fistulated sheep and goats on trials sites, 180 miles from our research base, I needed an improved plug which would not require regular inspection. This paper describes the construction of such a plug from polyethylene.

Design

The plugs are a modification of the cattle esophageal fistula plugs designed by Breen and Hunter (1976) and are made from readily available ultra high molecular weight polyethylene¹. This material allows plugs to be light-weight and very rigid. Construction details are shown in Figures 1 and 2. The plugs are cut to approximate shape from 25 mm thick blocks of polyethylene using a handsaw. Shaping can be easily performed on a bench grinder with final shaping and smoothing completed with sandpaper. The plug is then sawn in half and firmly held together with a 25 mm stainless steel hose clamp. The time for manufacture is around 30 minutes and the cost of the material in Australia is approximately \$1.25 per plug.

Discussion

These plugs have been successfully used to close the esophageal fistulae of Merino sheep and bush goats over a period of 18 months. Plug loss has not occurred and blockage of the esophageal has been very rare. As the plug is very light few cases of internal ulceration of the esophagus have been observed. The incidence of

Fig. 1. Construction details of the esophageal fistula plug.

ulceration can be further reduced if each plug is constructed with one flange longer than the other. At the end of each sampling period the position of the flanges are interchanged (Van Dyne and Torrell 1964).

The flanges of the plug are curved, which allows the upper surface to fit neatly against the wall of the esophagus and reduces the proportion of the esophagus blocked by the plug. Curvature at the base of each half of the plug helps replacement, especially if the fistula has contracted during sampling.

Conclusion

This esophageal fistula plug offers advantages over other com-

Fig. 2. Photo of the esophageal fistula plug.

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¹Ralloy (Cadillac Plastics (Australia) Pty. Ltd.)

monly used plugs. These include (1) no plug dislodgement and very rare blockage or ulceration of the esophagus; (2) cheapness, lightness, rigidity, ease of manufacture and use; (3) plug size can be varied to accommodate changes in fistula size and most importantly; (4) the plug allows esophageal fistulated animals at remote sites to be maintenance free for long periods.

Literature Cited

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