A Hand Electrode for the Electroejaculation of Bulls

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The invention and widespread use of the electroejaculator has made fertility testing of bulls a common practice. The rectal probe is standard equipment on most electrical ejaculators. Even though it has been widely used and will produce ejaculation in most bulls, it leaves much to be desired.

The design of the rectal probe is such that many areas other than the immediate area which produces ejaculation are severely stimulated. This results in many side reactions.[1, 2] These may include various leg reflexes, extreme rigid muscular contractions, loud bellowing, excitement, going down in the chute, and dragging the hind legs for a few seconds after being released. These side reactions are undesirable and create an unfavorable impression on many clients.

There is a small percentage of bulls in which it is very difficult to produce ejaculation with the probe. Several attempts may be required. There is another small percent in which only a small amount of very dilute semen is obtained. Both groups of bulls remain questionable until they are checked the second or third time and an adequate ejaculation is obtained. This is time-consuming and creates much inconvenience and expense for both the veterinarian and the client. In many of these cases the veterinarian must make a second call or the client must transport the bull to his clinic.

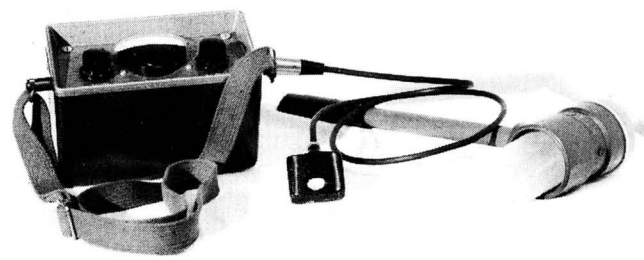
Many veterinarians find it difficult to get extension of the penis with the rectal probe in some breeds.

In routine fertility testing where the probe is used, most veterinarians consider 25 to 30 bulls a day's work!

Several workers[2, 3, 4] have been successful in using finger electrodes in place of the rectal probe. Their results were more consistent with fewer undesirable side reactions.

Due to the undesirable side reactions of the rectal probe and the inconsistent results in some bulls, it was felt that an improvement could be made in the routine electroejaculation of bulls. First, it was felt that the area stimulated should be reduced, and second, stimulation should be applied only in the region required to produce erection, extension of the penis and ejaculation.

To accomplish this, various sizes and shapes of electrodes that could be held in the hand with only a limited area of contact on the ventral surface were used. The base of the penis and the various accessory glands were palpated. The electrode was placed directly over this area pressing downward gently as current was applied every three or four seconds. The electrode was moved anteriorly and posteriorly and from right to left, noting the response. After much trial and error, working with many bulls of all ages, an electrode was developed which consistently gave excellent results. This electrode consists of a lead-in wire, an epoxy material backing and two parallel, copper areas of contact about 1/8 inch wide and two inches long, set 1-1/2 inches apart. The overall dimensions are about 2-1/2 x 2 x 1/4 inches. Near the anterior end, centered on the ventral surface between the areas of contact, is a circular depression.



Method Of Use

This hand electrode can be used with practically all makes of electrical ejaculators. The electrode is carried into the rectum with one hand while the equipment is operated with the other. The small battery operated, transistor equipment can be strapped over the shoulder of the operator. The larger ones can be set on a platform above the bull or on a stand at one side of the chute where the operator can reach the controls.

Very consistent results have been obtained with this electrode, using the following directions:

1. Make a rectal examination of the bull noting any abnormalities and remove any excess feces.
2. Before the anal sphincter contracts, immediately

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grasp the electrode in the hand and insert the hand with the electrode in the rectum. Be sure there is no appreciable amount of feces between the ventral surface of the electrode and the ventral wall of the rectum.

3. With the tips of the index and second fingers, palpate the bulb of the prostate gland. Place the circular depression on the ventral surface of the electrode directly over this bulb, pressing down gently.
4. With the ejaculator set on minimum readings turn the power switch clockwise until there is a slight contraction of the gluteal muscles of the bull and then anticlockwise. Repeat this process every three or four seconds, increasing the stimulus each time if necessary to the point of developing a definite rhythmic contraction and relaxation. After a series of four to ten stimulations, the penis should be extended and become erect.
5. With the penis extended and erect, stop the stimuli long enough to reach over the anterior border of the electrode with the index and second fingers and stroke the ampullae once or twice in a posterior direction. This will usually produce some semen.
6. With the electrode in the original position or moved slightly anteriorly (1/4 to 1/2 inch) stimulate another contraction. This should produce a large squirt of very concentrated semen.
7. Repeat this process of massaging and stimulating until the desired volume of semen is obtained.

Discussion

Semen can be obtained very easily from most bulls by following the above directions. Extremely fat bulls are more difficult to ejaculate and more power is usually required. A few other bulls require slight variations. If difficulty is experienced in getting the penis extended, the electrode is usually off center or is anterior or posterior to the desired location. Let the bull relax, reposition the electrode and start again. It may be necessary to resort to trial and error, moving the electrode slightly anteriorly or posteriorly until the desired results are obtained. After a little experience, one can usually tell by the muscular contractions produced whether or not the electrode is in the desired position to produce erection and extension of the penis.

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Very recently, in calves, central nervous system defects of a nature long implied to be genetic have been observed from the virus of BVD-MD and blue tongue. Calves born in BVD-MD herds with cerebellar aplasia (and lens opacity!) have recently been reported, as have calves with internal hydrocephalus been born in a herd with serological evidence of blue tongue.

Purebreed associations, breeders and multipliers of cattle "seed stock," and the AI organizations that select, supply, and distribute widely the genetic material for creating an ever increasing percentage of the national dairy and beef herds **must** maintain rational and reasonable policies toward the problem of congenital anomalies: use of reporting systems, sifting out the genetic from the environmental, appropriate action when significant harmful genes transmitting on a significant and predictable pattern are encountered. In the case of most harmful simple recessives, this will usually mean slaughter of the bull.

Few bulls, if any, in the past, have been so unique in their superior production qualities as to justify perpetuation and dissemination of disqualifying characteristics. It does not take many worthless calves to depreciate an otherwise superior production bull who is regularly transmitting a harmful genetic characteristic. Maintaining such a sire in service by praise for his superior qualities and apology for his defect—for the "good of the breed," may have advantages, but, mostly, unilateral to the sire owner!

A residual morass consisting of "genetic junk" transmitting upon no predictable pattern that is mixed with sporadic anomalies induced by capricious insults to developing calves while in their intrauterine environment will always persist. (—a missing eye, a "de-tail," an amputated limb, an imperforate anus)

Increased awareness, more accurate diagnoses and recognition of etiology, and more precise separation of the significant in implication from the insignificant in implication, should markedly reduce the magnitude and confusion of the morass.

While maintaining an attitude of interested alertness and offering assistance and encouragement in the reporting of anomalies to sire owners and breed associations, the bovine practitioner should recognize, *a priori*, that isolated facts available will usually limit him to a morphological diagnosis of the affected individual and will not include sufficiency of facts to permit a valid genetic diagnosis.

Capability to differentially diagnose congenital anomalies as to their possible etiologies will surely grow as the pathogenesis of congenital anomalies at biochemical and embryonal levels are elucidated. Is there doubt that in the environment conscious age of the future, new knowledge as to the environmentally induced anomalies will be forthcoming?

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Some bulls will start ejaculating shortly after stimulation is started, before they are massaged.

Where the maximum quantity and quality of semen is desired, before ejaculation is attempted, it is better to build most bulls up to a good erection once or twice, waiting about 30 seconds between each buildup for relaxation. This seems to serve the same purpose as one or two false mounts when semen is to be collected with an artificial vagina.

Advantages of the Hand Electrode

1. The time required for obtaining semen is reduced by more than 50%. With proper facilities and help, bulls can be semen-tested at the rate of six to twelve per hour.
2. Only the desired area is stimulated and less current is required. This relieves many of the side effects and undesirable reactions produced by the probe. It is much easier on the bull and looks much better to the client.
3. Results are more consistent. In ten years of experience, testing more than 2,000 bulls, semen was obtained from every bull.
4. Using the hand electrode, ejaculation has been produced very easily in bulls where competent and experienced veterinarians failed to obtain semen using the standard probe.
5. The penis can be extended in almost every bull regardless of breed.

Summary

A hand electrode, to replace the rectal probe, for the electroejaculation of bulls is described. Directions for its use are outlined. The advantages of the hand electrode over the probe are listed.

(The equipment is marketed by Standard Precision Electronics; Denver, Colorado.)

References

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