



LIVESTOCK WELFARE COORDINATING COMMITTEE

Established 1978

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GUIDELINES FOR USING ELECTROEJACULATION (EEJ) IN DOMESTIC RUMINANTS

1. PURPOSE OF THE GUIDELINES

Currently no guidelines as to the use of Electro-ejaculation in domestic ruminants exist in South Africa. This document aims to create an awareness, *inter alia*, amongst users of this technique as to potential consequences where the technique is inappropriately applied. Where performed by inexperienced hands the procedure can be stressful.

Increasing pressure from Animal Welfare lobbyists has created justifiable accountability applicable in all spheres of agriculture, particularly in the livestock production industries.

Electro-ejaculation has been employed as a reliable and efficient method for semen collection to evaluate the suitability of breeding sires. Emphasis is placed on the control of semen related infectious diseases and genetic defects. If this procedure is to be prohibited serious consequences are anticipated in this regard.

The OIE Global Animal Welfare Strategy (2017) was developed with the objective of achieving: "A world where the welfare of animals is respected, promoted and advanced, in ways that complement *the pursuit of animal health, human well-being, socio-economic development* and environmental sustainability". Justification for use of EEJ is motivated in this strategy. Publications have described it as an "essential veterinary diagnostic procedure". This applies particularly to disease surveillance and the potential harm alternative collection methods may pose to operators and workers (as in the case where ruminants are not trained to use an artificial vagina).

EEJ is a convenient, quick, and reliable method where no females are required. The use of an artificial vagina poses the risk of venereal disease transmission and certainly increases the risk of human injury. This alternative is justified as a substitute, as with semen preservation (freezing) and fresh semen artificial insemination in sheep and goats.

The guidelines, as set out, serve to support the intentions of the Animals Protection Act No. 71 of 1962.

In addition, these guidelines are intended solely for use of EEJ for semen collection from bulls, rams, and bucks. *Electro-Immobilisation* forms no part of these guidelines.

2. JUSTIFICATION FOR ELECTRO-EJACULATION

Collection of semen from bulls, rams and bucks using an artificial vagina is frequently the method of choice in stud animals trained to deliver an ejaculate without electro-ejaculation. This method is commonly employed at semen preservation facilities because the samples collected are thoroughly processed after collection prior to preservation (freezing). This processing entails dilution and decontamination. Unfortunately, this practise is impractical where large herds or flocks of animals are being evaluated for genital soundness. Aliquots collected by this method are invariably contaminated by debris in the artificial vagina. Electro-ejaculation is a necessary technique for the collection of semen from rams and bucks where an uncontaminated sample is required. Again, if sires are not tested because this procedure was to be prohibited, the consequences would be detrimental to animal production in a world already facing a global famine.

Any unpleasant sensory or emotional experience affects the welfare of animals. Minimizing discomfort in all animals remains a responsibility of all persons performing procedures on animals, including husbandry related procedures on farm animals. Electroejaculation (EEJ) is a procedure that does cause discomfort in animals. It is imperative all parties involved in the collection of semen from bulls, rams and bucks recognize this fact. The procedure should be conducted by trained and competent individuals, using the least traumatic technique. Where sedatives or anaesthesia are used for semen collection, such procedures would only be performed by a veterinarian.

3. TRAINING, EXPERTISE, APPLICATION

Operators performing this procedure should be able to provide appropriate certification, attestation or accreditation reflecting competency in carrying out EEJ in ruminants. To ensure animal welfare awareness the operator must have undergone suitable relevant anatomy and physiology training. A practical proficiency in the use of the equipment is expected. The operator must also have an understanding and ability to recognize and manage potential adverse outcomes. Ideally, operators using Electroejaculation to collect semen from ruminants should be able to sign off on a "Declaration Recognizing the Welfare concerns pertaining to Electroejaculation".

4. SPECIFIC MEASURES, METHODS AND TECHNIQUES

The suitability of the animal prior to the procedure should be carefully evaluated. The general condition, habitus, and response of the animal to its environment should be considered. Where breeding soundness certification is performed a thorough clinical examination and genital examination is performed prior to The animal must be restrained to minimize stress and the risk of injury. Risks are minimised with adequate training of operator and assistants. The detail here can span facility quality, equipment, method, and competency.

It is the operator's responsibility to ensure the facilities are of an adequate standard to minimise these risks. Construction of the holding structure should be suitably designed and maintained to accommodate the animal to be examined. The operator and assistants should be aware of the risks a neck clamp affords where EEJ is performed.

No "one technique" can be prescribed for semen collection by EEJ in ruminants. The procedure involves the insertion of lubricated probe into the rectum and the application of short, low-voltage pulses of electrical current to pelvic nerves stimulating smooth muscles of the ampullae and vas deferens.

In the case of bulls, modern bull electroejaculators are pre-programmed. Again, operators should be cognisant of breed differences. The various manufacturers of equipment recommend starting at the "lowest" settings and slowly working up to a "crescendo". If unsuccessful, a rest period of 5 to 10 mins is recommended.

Specific rectal massage of the ampullae can be used as a method of semen collection in bulls unaccustomed to handling and in young bulls accustomed to handling. Sperm morphology is not affected by this collection method. However, it should be noted that sperm characteristics such as motility and number of live sperm is lower in sample collected by rectal massage and could compound results interpretation in breeding soundness examination. The competent operator will be aware of this phenomenon.

In small ruminants the technique is also found to be varied. Dedicated equipment is obtainable for the procedure. Restraint by trained assistants is imperative to minimize trauma. Rams and bucks should be gently placed with hindquarters onto a clean surface and forelimbs restrained by an assistant. Trauma which may occur when extruding the penis of rams and bucks occurs when poor restraint is exercised. After extrusion of the penis rams and bucks are placed in lateral recumbency, again with necessary restraint. The rectal probe should be well lubricated and gently placed no further than 15 to 20 centimetres into the rectum of the animal. Electrical stimulation should start at a very low voltage working up to a crescendo. However, it should not take the operator longer than 10 to 20 seconds to collect a sample of semen by EEJ. If initially unsuccessful, another single attempt at collection can be carried out 30 to 45 seconds later. Repeated, futile attempts are stressful.

After a procedure has been completed, there must be adequate aftercare and observation to identify any untoward consequences and if necessary to treat the animals promptly and appropriately.

5. EQUIPMENT

Inappropriate, blunt, dirty, poorly maintained equipment will negate the acceptability of any method that might otherwise be deemed acceptable. Use of the correct, well-maintained equipment, which is properly applied, is essential. Older EEJ probes used in bulls had ring electrodes surrounding the barrel of the probe. It has been established these probes stimulated nerves dorsal to the rectum supplying hind limb muscles which may result in strong contractions of the legs, thighs and back. Modern probes are equipped with longitudinal electrodes on the ventral aspect. These then concentrate impulses in the areas where the relevant nerves are located minimising the stimulation of nerves to the back, thighs, and legs of the bull. For this reason, only probes with longitudinal electrodes are acceptable.

6. TIMING

Age, management programs, season, weather, and time of day should be borne in mind when carrying out EEJ.

The operator must be aware of the age differences at which the procedure can be performed successfully on bulls, rams, and bucks. This is particularly applicable to small ruminants (sheep and goats) where out of season collection may be deemed unjustified.

South Africa enjoys extreme temperatures, often exceeding 40 degrees Celsius. Electroejaculation causes discomfort resulting in an elevation in body temperature which is compromised by ambient temperature. Logically, the operator is expected to adjust collection timing according to ambient temperatures.

Animals must have reached an age and stage of puberty that is consistent with obtaining a satisfactory semen sample. Old, debilitated, sick or injured animals should not be electro-ejaculated.

7. CHANGES AND IMPROVEMENTS to GUIDELINES

Any changes to this Guideline, such as improvements to methods and equipment, must be fully evaluated for effects on animal welfare by competent authority and supported by sufficient evidence before implementation.

The Guideline must be based on the best evidence-based information currently available and therefore should be reviewed on a regular basis and, if necessary, revised as may be required.

Operators should be applying the procedure with compassion and benevolence. In addition, constant improvement to methods and equipment is encouraged.

8. REFERENCES

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Accepted: November 2022