CHAPTER - 17

Care, sterilization, storage and upkeep of ai equipments

Objectives

a) To learn the procedures and methods used for sterilization and upkeep of AI equipments.

Introduction

Knowledge about different procedures for cleaning and sterilization of equipments used in artificial insemination is very important for achieving high conception rates in bovine. It is necessary to store all the insemination equipment in a clean container.

Cleaning

Immediately after use of all A.I equipments should be washed thoroughly with water. Semen/ egg yolk adhered in the capillaries of A.I catheter or other glass wares get dry after a mean time then it is difficult to clean the glass wares. After doing A.I, catheters should be washed in running tap water to clean the remaining semen in the catheter. Glass wares may then be put in chromic acid solution for overnight dip to remove cloudiness in the glass wares. Application of corrosive substances should be avoided on substances like rubber-wares, it reduces the life span of rubber wares. All the equipments then washed with lukewarm soap solution using brush to make the articles grease free. Finally all the equipments are then washed with running tap water and put inverted for air dry.

Artificial vagina should be thoroughly washed using lukewarm detergent solution and brush. No need of separating the inner rubber lining from hard rubber cylinder while washing artificial vagina.

Sterilization

Sterilization is either physical or chemical treatment to eliminate microbes from the equipments. Unsterilized equipments may be the source of infection to female genital tract. Micro-organisms present in the semen reduce the life span of semen in the female reproductive tract. Sterilization of equipments should be done at all stages (Buffers, Semen dilutors, Semen storage & A.I) without negligence.

Dry heat sterilization

Generally preferred for glass wares & metallic wares. Dry heat sterilization process is easy & rapid and all the organisms are susceptible to dry heat sterilization. The pathogenic bacteria, viruses and fungi are killed within few minutes at 50-70ÚC and the spores of various pathogens are killed at 100ÚC. It is a common practice to sterilize all glassware and metallic wares in hot air oven at 180-200ÚC for 1 hour.

Autoclaving

Sterilization by autoclaving is a very popular method. The rapid action of sterilization by autoclaving is mainly due to latent heat of water vapor (540cal/gm).All rubber articles and artificial vagina may be autoclaved at 10 lb (4kg) pressure at 115.6ÚC for 20 minutes. Avoid high pressure, it would spoil and change the shape of such articles. Other articles including buffer solutions and Vaseline may be autoclaved at 17 lb (7kg) pressure at 121 ÚC for 15-20 minutes. Autoclaving is not suitable for solutions containing sugars, because it destroys sugars. Sterilized articles must be stored at air tight cabinets and buffer solutions after autoclaving, should be cooled down to room temperature and should be stored in refrigerator for use.

Ultraviolet radiation

Ultra-violet adsorption of bacteria is chiefly by purines and pyrimidines of nucleic acids and less to aromatic rings of proteins. Absorption of ultra-violet radiation causes lethal effect to nucleic acids & proteins. Semen processing lab should have low pressure mercury vapor lambs for sterilization purpose.

Gaseous sterilization (ethylene oxide)

Ethylene oxide is an effective sterilizing agent at lower temperature with good penetrating power under less desirable effects. It is used to sterilize heat labile & moisture sensitive objects like rubber, plastic wares & electronic items. Well cleaned & washed plastic wares are put in polythene bags and sealed it then sealed bags are sterilized in Ethylene oxide chamber.

Sample questions

1. Name the different methods of sterilizing A.I equipments. Describe the method of sterilization by autoclaving.
2. Which gas is used for sterilization of A.I equipments? Write in detail about it.

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