

## **Superovulation:**

Superovulation is the release of multiple eggs at a single estrus Cows or heifers can release as many as 10 or more ova.

### **Principle of Superovulation:**

Principle of Superovulation The basic principle of superovulation is to stimulate extensive follicular development through the use of a hormone preparation. The objective of super stimulatory treatments in the cow is to obtain a maximum number of fertilized and transferable embryos with a high probability of producing pregnancies

### **Hormonal methods:**

Hormonal methods FSH gonadotrophins from extracts of porcine or other domestic animal pituitaries PMSG, Equine anterior pituitary extract Prostaglandin (PGF)

Best time to use superovulation treatment 9 to 14 days of estrus cycle Quality and quantity of embryo both good. If we do not use Prostaglandins start treatment on day 17 of natural estrus cycle

#### **1- Superovulation with FSH in cow:**

Superovulation with FSH are injected twice daily for four days, Half-life of FSH in the cow has been estimated to be 5 h or less.

#### **Descending order treatment with FSH:**

Descending order treatment with FSH Days Morning Evening 9 7mg 7mg 10 6mg 6mg 11 5mg 5mg+ pgf2 (25 to 35mg Or 500ug analog) 12 4mg 4mg 13 3mg 3mg

#### **Advantages of FSH treatment:**

Advantages of FSH treatment Good quality and quantity of embryos produced The FSH treatment has resulted in slightly higher numbers of usable embryos

#### **Brand names of FSH:**

Brand names of FSH FSH-P Follitropin Pulset , Dose in cow 35 to 50mg

#### **2- Superovulation with PMSG in cow:**

Superovulation with PMSG a complex glycoprotein with both FSH and LH activity half-life is 40 h in the cow and persists for up to 10 days in bovine circulation; injected once followed by a PGF injection, 48 h later At day 9 Give inj.of PMSG 3000I.U I/M.

**Advantages of PMSG:**

Advantages of PMSG Easy PMSG has long half life It is associated with overstimulation of the ovaries, hence produces large numbers of follicles and ovulations; Only single injection required

**Brand names of PMSG:**

Folligon Gestyl Antex Pregnecol Dose is 2500 to 3000 i.u

**3- Superovulation in doe:**

Superovulation in doe In goats FSH and PMSG mostly used The injection of multiple doses of FSH on the last 3 to 4 days of the progestin treatment, FSH administered every 12 hours Twice-a-day injection of a series of decreasing doses of FSH (5, 5; 3, 3; and 2, 2mg per injection) With a total dose of 20mg Injection of 150 $\mu$ g of a PGF $2\alpha$  analogue

Recently the use of estrogens at the time of progesterone implant insertion and removal have improved superovulation responses When PMSG is used, a single injection 24 to 48 hours prior to implant removal is administered to the donor doe. Doses of PMSG range from 500IU to 1500IU, Depending on breed, age, and size of doe and previous responses to treatment.

**4- Superovulation in Ewe:**

superovulation in ewe FSH 18 to 22mg PMSG usually given 72 to 48 hours before progestin withdrawal at a dose of 1000 to 1500IU, depending on breed and body size. A combination of FSH and eCG has been used in superovulation programs. A single, low dose of eCG (150–250IU) given simultaneously with the first or second injection of FSH is reported to improve consistency of the program without the associated overstimulation associated with the larger dose of eCG by itself.

**• Factors effecting superovulation response:**

Factors effecting superovulation response Intrinsic factors (related to the physiological status of the animal) such as genetic differences and ovarian status at the time of treatment. Extrinsic factors such as season, nutrition and hormone preparations.

Inherent to the animal and its environment, Age, Breed, Lactational status, Nutritional status, Season, and stage of the cycle at which treatment is initiated.