

ROLE OF PROGESTERONE IN ANIMAL PRODUCTION

Progestin is a substance, which converts the estrogen-primed endometrium to secretory and maintain pregnancy in animals spayed after conception.

(Progestin = Favoring pregnancy).

The most common progestin is progesterone, which is the hormone mainly responsible for nidation and maintenance of pregnancy.

Source

Progesterone is the gonadal hormone secreted principally by corpus luteum. It regulates several functions in reproduction such as Maintenance of Pregnancy, Induction of ovulatory heat, Development of Mammary glands, Suppression of uterine motility etc.

Role

The most dramatic role of progesterone probably occurs during pregnancy. As the name of the steroid implies, it favors gestation, at least in early pregnancy in all species.

The early rise in progesterone following development of the CL prepares the uterus for pregnancy at every cycle.

Progesterone acts on the endometrium, inhibiting myometrial activity and causing preparation for nidation regardless of whether or not a zygote is present.

Progesterone favors an economy of body metabolism and during pregnancy the female experiences a period of increased efficiency of nutrient utilization. Such an effect is favorable if the nutrient supply is limited or costly.

The psychic effects of progesterone favor maternal behaviour in the female such as nest building.

Progesterone in low doses favors ovulation in the cow, rat, rabbit and bird. This is probably indirect through its effect on LH release.

The physiologic **half-life** of progesterone is only **22-36 minutes** in the cow. This means that constant secretion is essential to maintain the circulating level.

Metabolism and Excretion

Transport of estrogens (estradiol particularly) and progestins (progesterone particularly) in the serum is similar for both.

Both are weakly but extensively bound to plasma proteins, which accounts for most of the circulating sex steroids. Of the remainder, progesterone is strongly bound to transcortin, while estrogen is weakly bound to the sex steroid binding globulin. The relative importance of the above varies with species and is an area of research activity.

Progesterone is eliminated as various glucuronides in urine of some species but in bile of ruminant animals.

Synthetic Progestins

These are either progesterone derivatives (21 C) or 19-nortestosterone derivatives (18 C).

Progesterone derivatives	19-Nortestosterone derivatives	
	Older compounds	Newer compounds
Medroxyprogesterone acetate (oral + long acting injection)	Norethindrone ^e (Norethisterone)	(<i>Gonanes</i>)
Megestrol acetate	Norethynodrel	Desogestral
Dihydrogesterone	Ethinodiol diacetate	Norgestimate
Hydroxyprogesterone caproate (Long acting injection)	Lynestrenol (Ethinylestrenol)	Gestodene
Chlormadinone acetate (Also antiestrogenic)	Allylestrenol	
Newer compound Nomegestrol acetate	Norgestrel ^e (<i>Gonane</i>)	

Clinical Uses

Dosage of the exogenous progesterone, as per research studies is suggested to be 500mg. This dose if used as per the recommended schedule of administration effectively checks habitual abortion.

Exogenous progesterone can be used as management tool to control abortions in the first trimester of pregnancy, as the fetus is at more risk in this period.

Exogenous progesterone also helps to control prolapse of vagina, cervix and uterus.

Embryonic Death

Many clinicians have suspected that embryonic death in some animals may be due to deficiency of progesterone. The hormone has been widely used with variable results in cows, mares and other domestic animals.

Progesterone USP, in oil should be given intramuscularly daily as follows:

- ♦ Cows and Mares - 500 mg
- ♦ Sheep and Swine – 250 mg

Progesterone in a depot form has duration of action of 1-2 weeks.

Estrus synchronization

Principle:

Maintain the cow under the influence of progesterone until corpus luteum regresses; remove progesterone - Animals respond to progesterone with estrus 2-5 days later.

Estrus Suppression

Considerable research has been done on blocking estrus in the bitch by administration of progesterone or one of its analogs.

The blockage of GnRH release and output of pituitary gonadotropins are successful and the ovary does not grow follicles. The bitch does not experience estrus while under the influence of exogenous progesterone.

For Further information please refer to our Product details of **NuGestron....**