

Hormonal Manipulation of Your Mare for Breeding

Breeding season is once again upon us and questions often arise regarding the use of hormones to facilitate breeding a mare. Veterinarians use a number of different hormones in an attempt to mimic and/or modify the physiology of a mare for breeding purposes. This article will discuss a couple of the more commonly used hormones and their uses.

To understand when and why the hormones are used, one needs to have a good grasp of the basic hormonal events involved in the mare's estrous (heat) cycle. A normal cycle is 21-22 days in length. Day 0 is the day of ovulation. There are a number of hormonal events that precede ovulation. Hormonal manipulation is targeted at several points throughout the 21 day cycle when breeding a mare.

Immediately following ovulation, a corpus hemorrhagica (CH) forms. A CH is the ovarian structure that forms immediately following follicular release. The CH is followed by formation of a corpus luteum (CL) which is a progesterone secreting structure that remains present throughout the 14-16 days of diestrus (luteal phase) after ovulation. If the uterus does not recognize any signs of pregnancy, the uterine endometrium produces prostaglandin F_{2a} (PGF_{2a}). PGF_{2a} causes luteolysis or the regression of the CL. The drop in progesterone from the regressing CL results in priming of the ovary to produce a new follicle to ovulate.

In the 5-7 day period prior to day 0 there is increasing levels of estrogen produced in response to the developing follicles. The high levels of estrogen are responsible for the behavioral changes that the mare exhibits when she "in heat". The other hormone that increases to a peak right before ovulation is luteinizing hormone (LH). The peak in LH hormone ultimately results in ovulation occurring from the ovary, thus beginning the cycle again.

The most common part of the estrous cycle to be manipulated by your veterinarian is the luteal phase. Many veterinarians will use a synthetic PGF_{2a} preparation to shorten the cycle of a mare with a mature corpus luteum. Your veterinarian will advise you that PGF_{2a} will not work for the first 7 days following ovulation. A mare treated with PGF_{2a} will return to estrus in 3 to 5 days following the hormone being administered. It does this by causing the mature CL to regress mimicking normal physiology and thus results in the mare coming into heat. Depending on the structures present on her ovaries, the mare will ovulate in about 7 days after the PGF_{2a} is given. This type of hormone treatment is used in the process of "short cycling" your mare.

Another hormone often used by your veterinarian is HCG (human chorionic gonadotropin). HCG is a LH-like hormone which is used to stimulate induction of ovulation. HCG is most effective if the mare has defined endometrial folds (on ultrasound) and a dominant follicle of greater than 30 mm diameter. Typically, your veterinarian will administer a dose of HCG immediately after insemination with semen, if

she has not already ovulated. The follicle will usually ovulate 24-48 hours following the administration of HCG.

These are the two most common hormonal manipulation of the mare's estrous cycle that your veterinarian will perform. These preparations are often used in combination or on their own to help in breeding your mare. Other hormonal manipulation can be used that have the same effects. As with any drug or hormonal treatment, there are side effects that are associated with their administration. If you have any concerns consult your veterinarian for further information. Best of luck this breeding season. Enjoy your horses!

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