12. Effects of equine Chorionic Gonadotrophin (eCG) on ovarian dynamics in Nelore cows. MACM Bergamaschi[a], WRR Vicente[a], RT Barbosa[b], R Machado[b], PS Baruselli[c], MM Alencar[b] & M Binelli[c], *[a]Departamento de Reprodução Animal, Universidade Estadual Paulista (UNESP), Jaboticabal, Brazil, [b]Embrapa Pecuária Sudeste, São Carlos and [c]Departamento de Reprodução Animal, Universidade São Paulo (USP), Brazil*

All protocols of timed artificial insemination involve some sort of hormone treatment to synchronize ovulation. It has been demonstrated that progestagen methods give better results[1]. In addition, the administration of equine chorionic gonadotrophin (eCG) at progestagen withdrawal improves conception rates in beef cattle[2]. This study aimed to evaluate the effects of eCG on follicular dynamics, as well as corpus luteum (CL) development and function after an ovulation synchronization protocol.

A group of 16 mature, synchronized (CRESTAR®), lactating Nelore (*Bos taurus indicus*) cows were randomly allotted to receive either 400 IU of eCG at implant withdrawal (G_{eCG}; n=8) or remain as controls (G_C; n=8). Ultrasound *per rectum* evaluation of ovaries was conducted daily, from implant removal up to the following ovulation (a complete estrous cycle). Simultaneously, blood samples were taken to determine the plasma concentrations of progesterone ([P4]). Data were analyzed by GLM of the SAS program.

The length of the 2nd wave of follicular growth (FG) was shorter ($P<.05$) in G_{eCG}, even though traits assessed of the 1st and 3rd waves were not affected ($P>.05$) by eCG. As a result, the interval between the synchronized and the subsequent natural ovulation was similar ($P>.05$) between groups. Preovulatory follicle diameter of the synchronized cycle was not different ($P>.05$) between G_C (13.38 ± .39 mm) and G_{eCG} (12.72 ± .39 mm). The highest [P4] occurred on the 11th day of the estrous cycle for both groups. However, [P4] of G_{eCG} (8.15 ± .64 ng/mL) was higher ($P<.05$) than G_C (6.37 ± .64 ng/mL). G_C presented three 2-wave (37.5%) and five 3-wave cows (62.5%) in comparison with one 2-wave (12.5%) and seven 3-wave (87.5%) cows in the G_{eCG}. However, this difference was not significant ($P>.05$).

eCG has FSH-like activity and promotes follicular growth and maturation, ovulation of the dominant follicle and further development of the subsequent CL. In addition, eCG binds to follicular and luteal gonadotrophin receptors and causes an increase in the number of large luteal cells, which are responsible for some 80% of the progesterone synthesized by CL[3]. Indeed, G_{eCG} cows showed increased [P4] from the mid luteal phase (D11) up to the following natural ovulation. The luteotrophic effects of eCG reduced the length of the 2nd wave of follicular growth perhaps by the high P4 concentrations lowering gonadotrohin secretion. A lack of gonadotrophin stimulation would likely retard follicular growth and induce precocious atresia. We conclude that eCG given at progestagen removal affected follicular dynamics of the subsequent estrous cycle and promoted increases in the [P4] from the mid luteal phase.

[1]Odde, 1990. Journal of Animal Science 60-61:713-723.
[2]Baruselli *et al.* 2004. Animal Reproduction Science 82-83:479-86
[3]Niswender *et al.* 1985. Recent Progress in Hormone Research 41:101.