

Use of estradiol at day 14 post-TAI does not impair the pregnancy maintenance and increases the pregnancy rate in resynchronized beef heifers

**Igor Garcia Motta¹, Danilo Zago Bissinoto², João Abdon Santos³,
Fainer Lincoln Savazzi Bertoni³, Vitor Hugo Guilger Gonzaga¹,
Gilmar Arantes Ataíde Júnior¹, João Vitor Vasconcellos², Bruno Gonzalez de Freitas⁴,
Kleber Menegon Lemes⁵, Ed Hoffmann Madureira¹, Guilherme Pugliesi¹**

¹VRA-FMVZ-USP - Departamento de Reprodução Animal, Pirassununga, SP, Brasil; ²FZEA-USP - Faculdade de Engenharia de Alimentos e Zootecnia, Pirassununga, SP, Brasil; ³JA Reprogen, Eunápolis, BA, Brasil; ⁴Ourofino - Ourofino Saúde Animal, Cravinhos, SP, Brasil; ⁵Boehringer-Ingelheim - Boehringer-Ingelheim Animal Health do Brasil Ltda, Campinas, SP, Brasil.

We aimed to evaluate the effects on pregnancy rate of using estradiol benzoate (EB) or 17 β -estradiol (E2) associated to progesterone (E2+P4) in a resynchronization protocol at 14 days post-TAI in heifers. Thus, 1178 Nelore and 117 cross heifers (NelorexAngus) had the ovulation synchronized and were submitted to TAI (D0). On D14, heifers received an intravaginal P4 device (1g, Sincrogest, Ourofino Saúde Animal) and were randomly split in 3 groups: control (no treatment; n=433); EB (1mg EB, Sincrodiol, Ourofino; n=431); and E2+P4 (1mg E2 + 9mg P4, Betaproginn, Boehringer-Ingelheim; n=431). On D22, color Doppler ultrasonography was performed to detect non-pregnant (NP) heifers based on luteolysis detection (Pugliesi et al., Biol Reprod, 4: 1-12, 2014). The NP heifers received 1mg E2 cypionate (SincroCP, Ourofino), 500 μ g sodium cloprostenol (Sincrocio, Ourofino) and 200IU eCG (SincroeCG, Ourofino), and the largest dominant follicle (DF) was measured. A second TAI was performed on D24. In a subgroup of NP heifers (n=337), an estrous detection patch (Boviflag, ABS Pecplan) was used between D22 and D24, and DF was measured at the second TAI. Confirmatory diagnoses based on detection of embryo/fetus with heartbeat were performed between D37-67 after first TAI, and 43-47 days after second TAI. Data were evaluated by ANOVA (PROC MIXED), LSD test or logistic regression (PROC GLIMMIX) of SAS. No interaction with breed and lot was observed. Pregnancy rates (PR) after first TAI did not differ ($P>0.1$) between the control, EB and E2+P4 groups on D22 (53% [230/433], 53% [229/431] and 50% [217/431]) and confirmatory diagnoses (43% [149/344], 44% [154/349] and 46% [156/342]), respectively. Pregnancy loss between D22 and D37-67 was similar ($P>0.1$) in the control (19% [36/185]), EB (15% [28/182]), and E2+P4 (15% 28/184) groups. On D22, the DF diameter (mm) was greater ($P<0.05$) in the control group (11.9 ± 0.14), than in the EB (11.3 ± 0.1) and E2+P4 (11.5 ± 0.1) groups. Proportion of heifers detected in estrus, and DF diameter on D24 did not differ ($P>0.1$) among the groups (overall mean: $63 \pm 4.5\%$ and 13.0 ± 0.2 mm, respectively). However, DF growth rate (mm/day) from D22 to D24 was greater ($P<0.05$) in the EB group (0.89 ± 0.08) than in the control (0.59 ± 0.07) and E2+P4 (0.66 ± 0.09) groups. The PR for the second TAI was greater ($P<0.05$) in the EB group (47% [94/200]) than in the control group (37% [76/203]), but did not differ ($P>0.1$) in the E2+P4 group (43% [93/214]) compared to the others. Cumulative PR (first and second TAIs) did not differ ($P>0.1$) between control, EB and E2+P4 groups (59% [204/344], 65% [227/349], 64% [220/342], respectively). In conclusion, administration of 1mg EB or 1mg E2 + 9mg P4 at 14 days post-TAI does not impair the pregnancy, and the 1mg EB treatment increases the pregnancy rate in resynchronized beef heifers for a second TAI within 24 days. Acknowledgments: FAPESP (2015/10606-9; 2017/18613-0); Geneplan; JA Reprogen; Faz Querência.