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Influence of length of p-FSH treatment prior to ovum pick-up on ovarian response and *in vitro* embryo production in Holstein heifers

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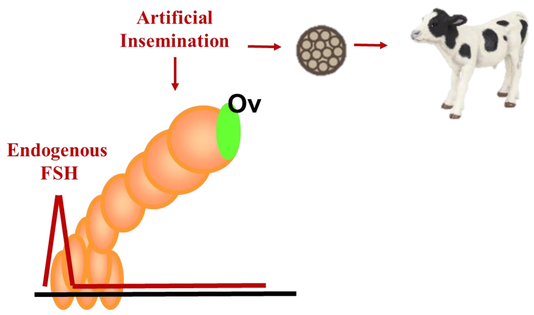
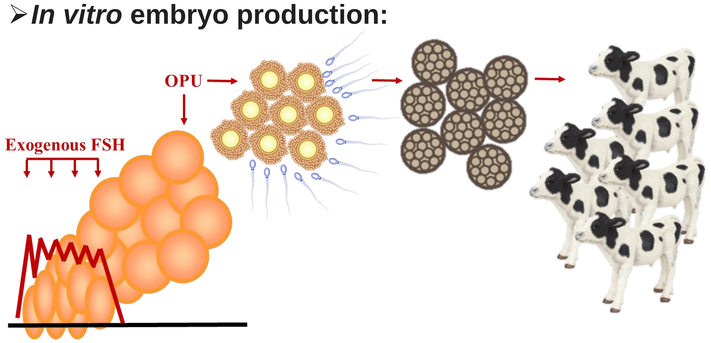
INTRODUCTION

➢Conventional methods:



➢*In vitro* embryo production:



OBJECTIVE

➢ To determine the effect of length of the superstimulatory treatment period prior to ovum pick-up (OPU) on ovarian response and *in vitro* embryo production (IVP) in heifers.

METHODS

➢Non-pregnant heifers (n = 57) 13.8 ± 0.2 months of age with a body condition score of 3.0 ± 0.1 (scale 1 to 5) were assigned in a completely randomized design to one of the following experimental groups (Figure 1):

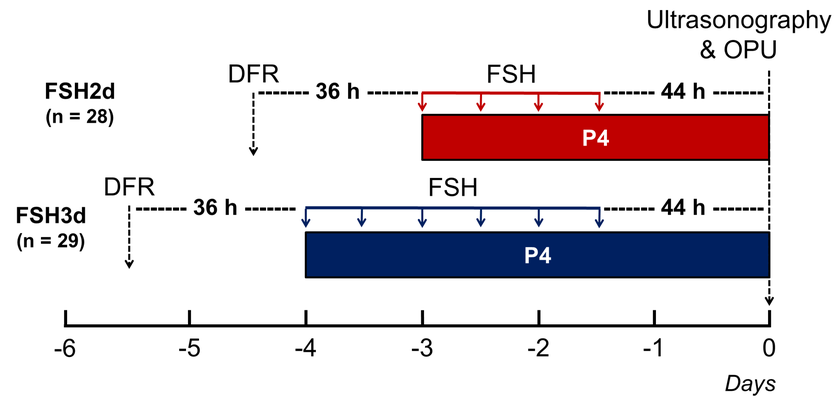
➢**FSH2d** – 200 mg of p-FSH (Folltropin-V®, Vetoquinol) distributed in four injections (60, 60, 40, and 40 mg) of FSH 12 h apart.

➢**FSH3d** – 200 mg of p-FSH distributed in six injections (40, 40, 40, 40, 20 and 20 mg) of FSH 12 h apart.

➢Follicle numbers were determined at OPU and classified as **small** (< 6 mm), **medium** (6-10 mm) or **large** (> 10 mm).

➢Differences between treatment groups were evaluated using generalized linear mixed models (SAS 9.4).

Figure 1. Treatment schedule for heifers superstimulated during 2 or 3 days with exogenous FSH



RESULTS

Table 1. Follicle numbers by size category in heifers superstimulated during 2 or 3 days with exogenous FSH

	FSH2d (n = 28)	FSH3d (n = 29)	P-value
Small Follicles (< 6 mm)	5.9 ± 0.6	5.7 ± 0.8	0.83
Medium Follicles (6-10 mm)	17.0 ± 2.4	12.9 ± 1.6	0.18
Large Follicles (> 10 mm)	2.5 ± 0.5[A]	4.5 ± 0.6[B]	0.01
Total Follicles	25.4 ± 2.6	23.1 ± 1.8	0.60

Figure 2. Proportion of small (<6 mm), medium (6–10 mm), and large (>10 mm) follicles at OPU

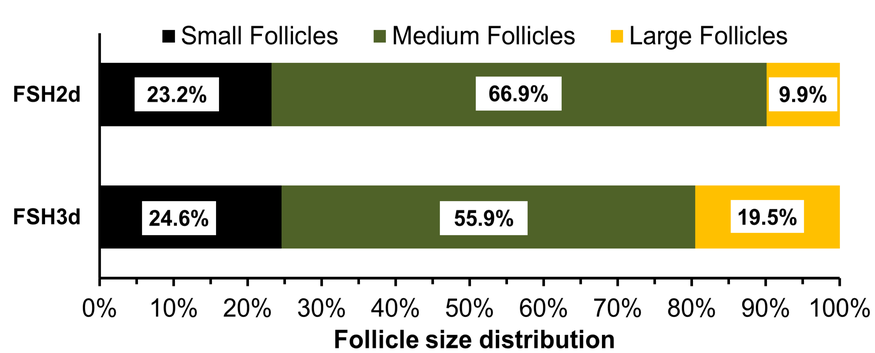


Figure 3. Oocyte production in heifers superstimulated during 2 or 3 days with exogenous FSH

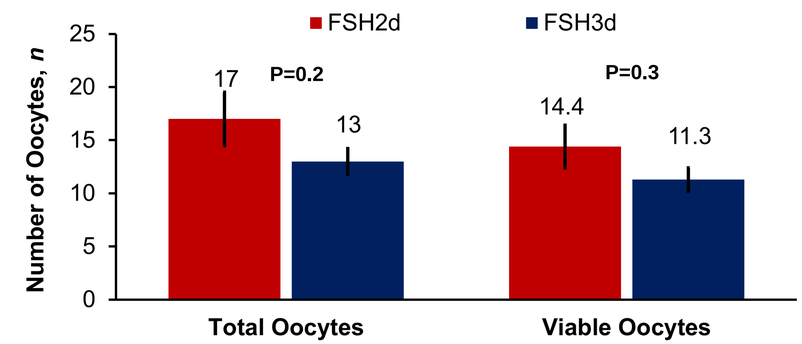
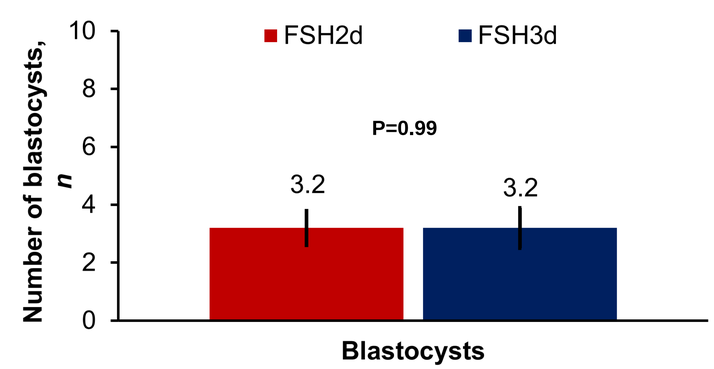


Table 2. Oocyte recovery rate, percent viable oocytes, cleavage and blastocyst rate in heifers superstimulated during 2 or 3 days with exogenous FSH

	FSH2d (n = 28)	FSH3d (n = 29)	P-value
Recovery rate (%)	62.6 ± 3.7	56.9 ± 3.1	0.26
Viable Oocytes (%)	85.0 ± 2.4	88.0 ± 3.0	0.31
Cleavage rate (%)	54.7 ± 5.7	54.1 ± 5.7	0.98
Blastocyst rate (%)	20.6 ± 4.0	22.4 ± 3.7	0.97

Figure 4. Blastocyst number in heifers superstimulated during 2 or 3 days with exogenous FSH



DISCUSSION & CONCLUSION

Lengthening the period of FSH treatment by 1 d (FSH3d) increases the number of large follicles at OPU, however, does not improve overall ovarian response, oocyte recovery nor embryo production.

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