Luteinizing hormone (LH) profiles after either porcine LH or GnRH treatment in Holstein cows with or without FSH-stimulation

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Background

- Replacing the second GnRH injection with 25 mg porcine luteinizing hormone (pLH) in “Ovsynch” protocol: 1) Increased pregnancy rate in dairy cattle [1].
- Altered the expression of intrafollicular proteins associated with improved oocyte competence [2].
- The wide variability in superovulatory responses and embryo yield in FSH-stimulated cows might be potentially reduced using pLH if the altered LH profile attained in non-stimulated cows could be established in superovulated cows.

Objective

To characterize LH profiles after giving pLH or GnRH in non-lactating Holstein cows subjected to different levels of FSH stimulation.

Methodology & Results

- No FSH stimulation (NS; n=13, 0 mg FSH)
- Partial stimulation (PS; n=8, 200 mg FSH)
- Full stimulation (FS; n=12, 400 mg FSH)

- Radioimmunoassay: by using an anti-bovine LH monoclonal antibody

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<tr>
<th>Time interval (hour)</th>
<th>Least-square means for plasma LH concentrations</th>
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<tbody>
<tr>
<td>0 - 5 h</td>
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<td>5 - 20 h</td>
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Conclusion

- Plasma LH concentrations in cows given 25 mg pLH remained elevated for a longer period than in cows given 100 µg GnRH.
- Whether giving pLH to superovulated cows will reduce variability in ovarian response and improve embryo quality remains to be seen.

Abbreviations

FSH: Follicle stimulating hormone
GnRH: Gonadotropin releasing hormone
LH: Luteinizing hormone
PGF₂α: Prostaglandin F₂α
pLH: Porcine luteinizing hormone
PRID: Progesterone-releasing intravaginal device

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References

[1]. Colazo et al., 2009; Theriogenology 72:262-270
[2]. Behrouzi, 2014; MSc thesis University of Alberta