Effects of Growth Hormone (GH)-Releasing Hormone, Thyrotropin-Releasing Hormone and GH-Releasing Hexapeptide on Prolactin and GH in gilts

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Objective

- Evaluate the effects of acute administration of Growth Hormone (GH) -Releasing Hormone (GHRH), Thyrotropin-Releasing hormone (TRH), GH-Releasing Hexapeptide ($GHRP_6$), GHRH+TRH and GHRH+TRH+$GHRP_6$ on Prolactin (PRL) and GH in gilts

Introduction

- GH and PRL promote protein synthesis, amino acids and monosaccharide uptake and an increase of the insulin – like growth factors.
- hGHRH (1-29) NH_2 (GHRH) is a human GHRH with the same 29 initial amino acids of hGHRH (1-44) NH_2 with a potent effect in pigs.
- $GHRP_6$ is responsible for a dose-dependent output of GH, it's pathway is distinct from the one used by GHRH.
- TRH increases PRL in sows and PRL and GH in hers foetuses. GHRH+TRH administration has a synergic effect on GH release in bovines and birds.

Methods

- *Animals.* Six Large White x Landrace gilts, 8 months of age, 130 ± 12 kg BW.
- *Treatments.* iv single dose of GHRH, TRH, $GHRP_6$, the first two (II), all three peptides in combination (III) and NaCl (control).
- *Dose.* 2 μg/kg for GHRH and TRH and 8 μg/kg for $GHRP_6$.
- *Analysis.* GH and PRL analysed by RIA.
- *Design.* Over 6 consecutive days, each gilt was daily infused with a different treatment. Blood samples withdrawn at –15, 0, 5, 10, 15, 20, 30, 45, 60, 90, 120 min around time of injection (14:00 h).
- *Statistical analysis.* 6x6 latin square. t-Student test (P<0.05). Proc GLM of SAS.

Results

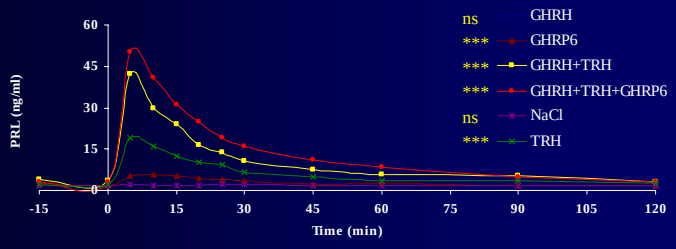

Figure 1 – PRL plasma levels. P-values of t-student test between means within treatment (*** - P<0.001; ns - P>0.10).

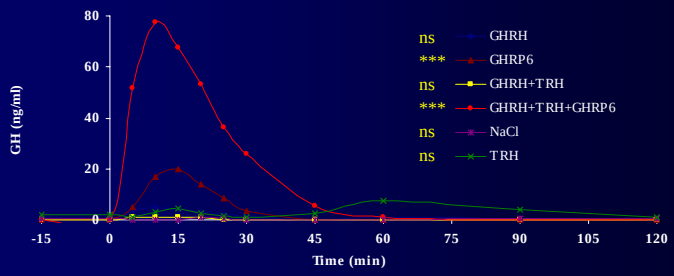

Figure 2 – GH plasma levels. P-values of t-student test between means within treatment (*** - P<0.001; ns - P>0.10).

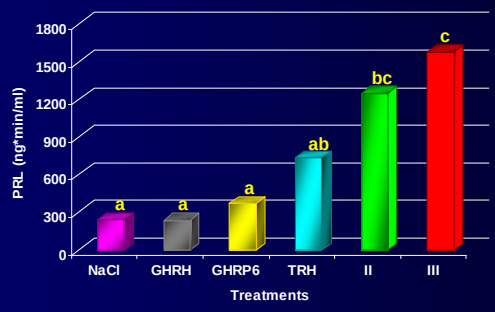

Figure 3 - Areas under PRL plasma levels curves after each treatment. Means with different letters differ (P<0.05)

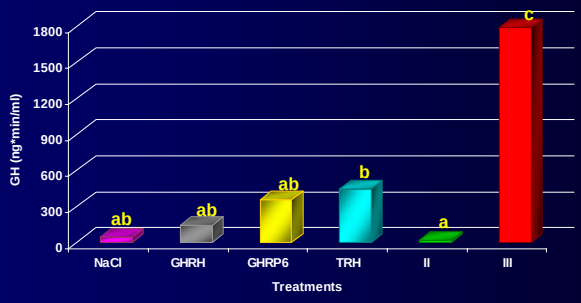

Figure 4 - Areas under GH plasma levels curves after each treatment. Means with different letters differ (P<0.05)

Conclusions

- TRH promoted the highest PRL rise. Apparently this hormone exerts a synergic effect with GHRH and the previous two an additive effect with $GHRP_6$ over PRL level.
- $GHRP_6$ was the only isolated peptide promoting a rise in the GH level and treatment III suggests a synergic effect of these tree peptides on the GH level.
- Area under curves show a rise on PRL levels just when the peptides were administered in combination and on GH levels just for the combination of the three peptides.