



BACKGROUND

- Transition dairy cows often experience a gradual decrease in feed intake before calving, followed by a sudden intake of high starch diet, which is a risk factor for sub-acute ruminal acidosis (SARA).
- SARA is a potential source of **INFLAMMATION** and can be experimentally induced in dairy cows by the abrupt introduction of a high starch diet (**30 to 34% of DM**).

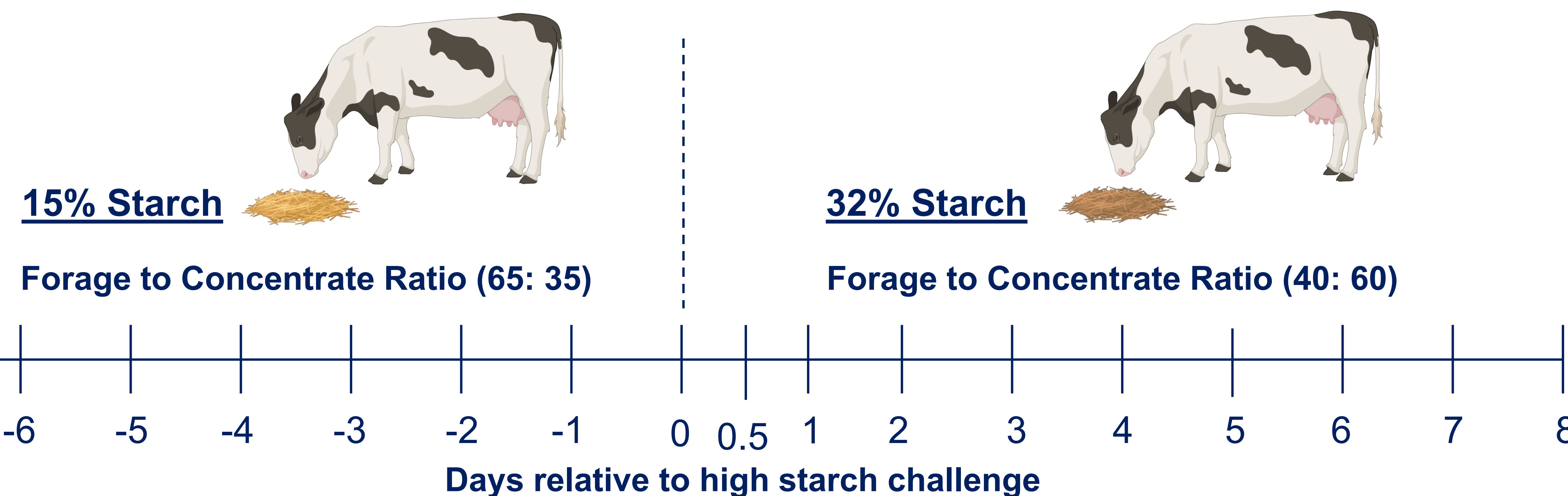
HYPOTHESIS & OBJECTIVES

- Objectives were to assess the effects of an oral bolus containing **live yeast, Mg, Ca, and K** (YMCP Vitall) on feed restriction model design to introduce SARA induced through an abrupt change to a high starch diet.
- The hypothesis was that bolus treatment would reduce the severity of SARA by attenuating inflammation and improving feed intake.

STUDY DESIGN

- Pregnant nulliparous cows (**n = 24**) were fed a **low starch diet** (15% of DM) and subjected to **gradual feed restriction** by 10% each day for three days. Then cows were blocked based on DMI and body weight and randomly assigned treatments as bolus (**BOL**) or no bolus (**CON**), followed by the abrupt introduction of a **high starch diet** (32% of DM) ad libitum for 7 days.

Bolus (**BOL**) was administered on days 0 and 0.5 relative to high starch challenge.



Based on baseline DMI data of five consecutive days during low starch diet, feed was restricted gradually by 10% on days -3, -2, and -1 relative to high starch challenge

DATA ANALYSES

- The data were analyzed by ANOVA using mixed-effects models in SAS.
- $$Y = \mu + \text{Treatment (CON vs BOL)} + \text{Day} + \text{Treatment} \times \text{Day} + \text{Covariate} + \text{Block (Random Effect)}$$

RESULTS

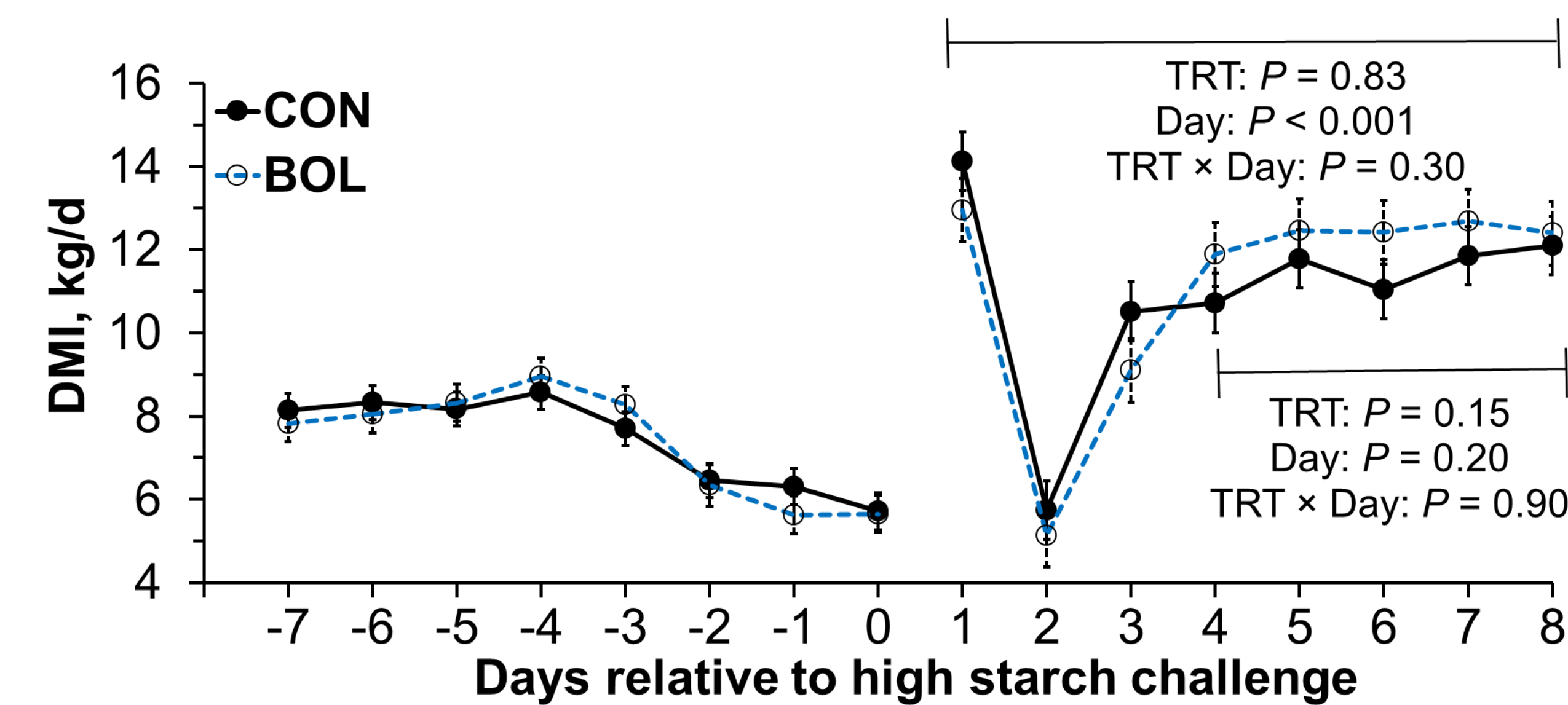


Figure 1. Effect of treatments (TRT) on DMI in pregnant nulliparous cows exposed to high starch challenge. Data were analyzed separately from days 1 to 8 and from days 4 to 8 relative to high starch challenge

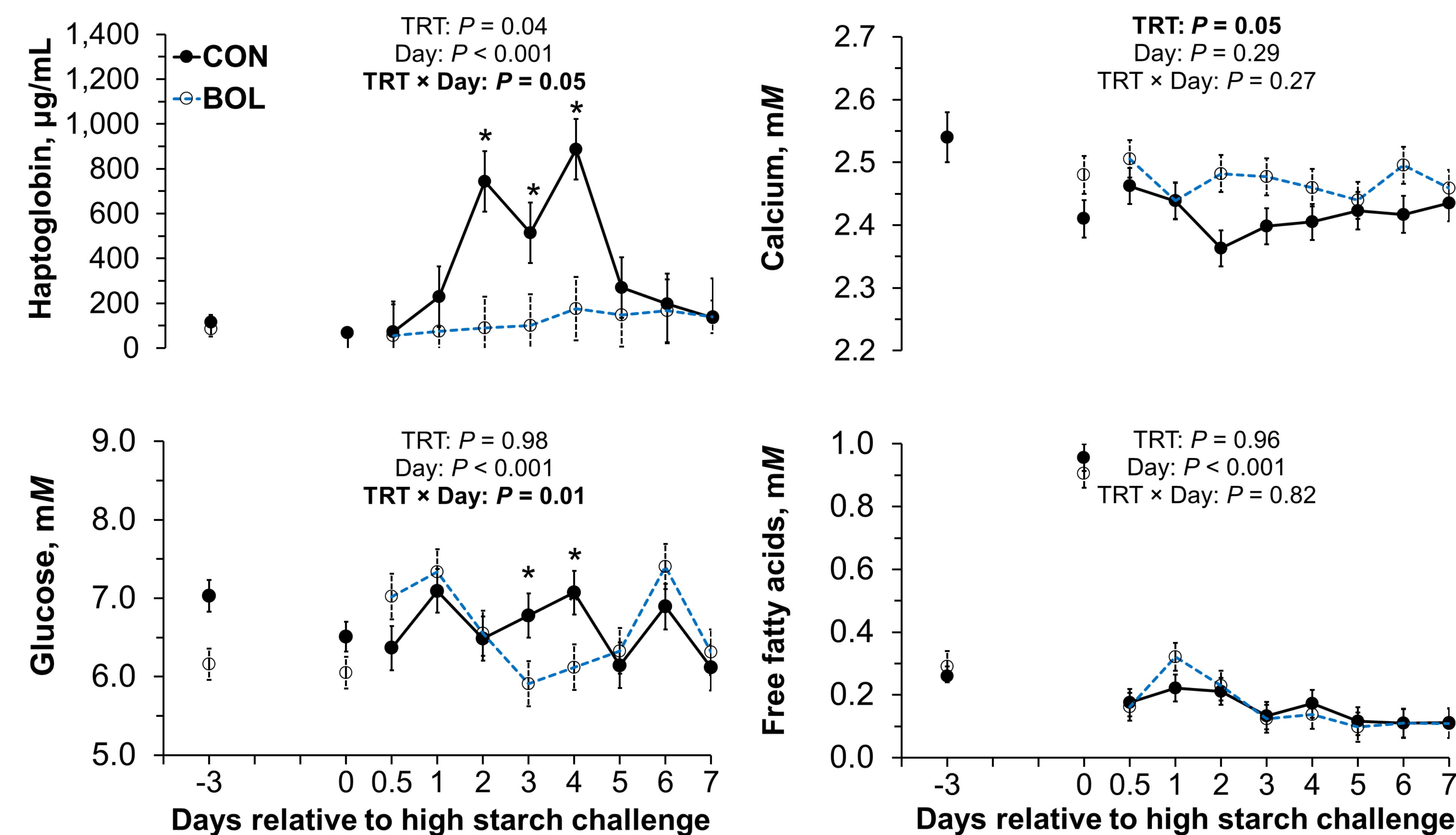
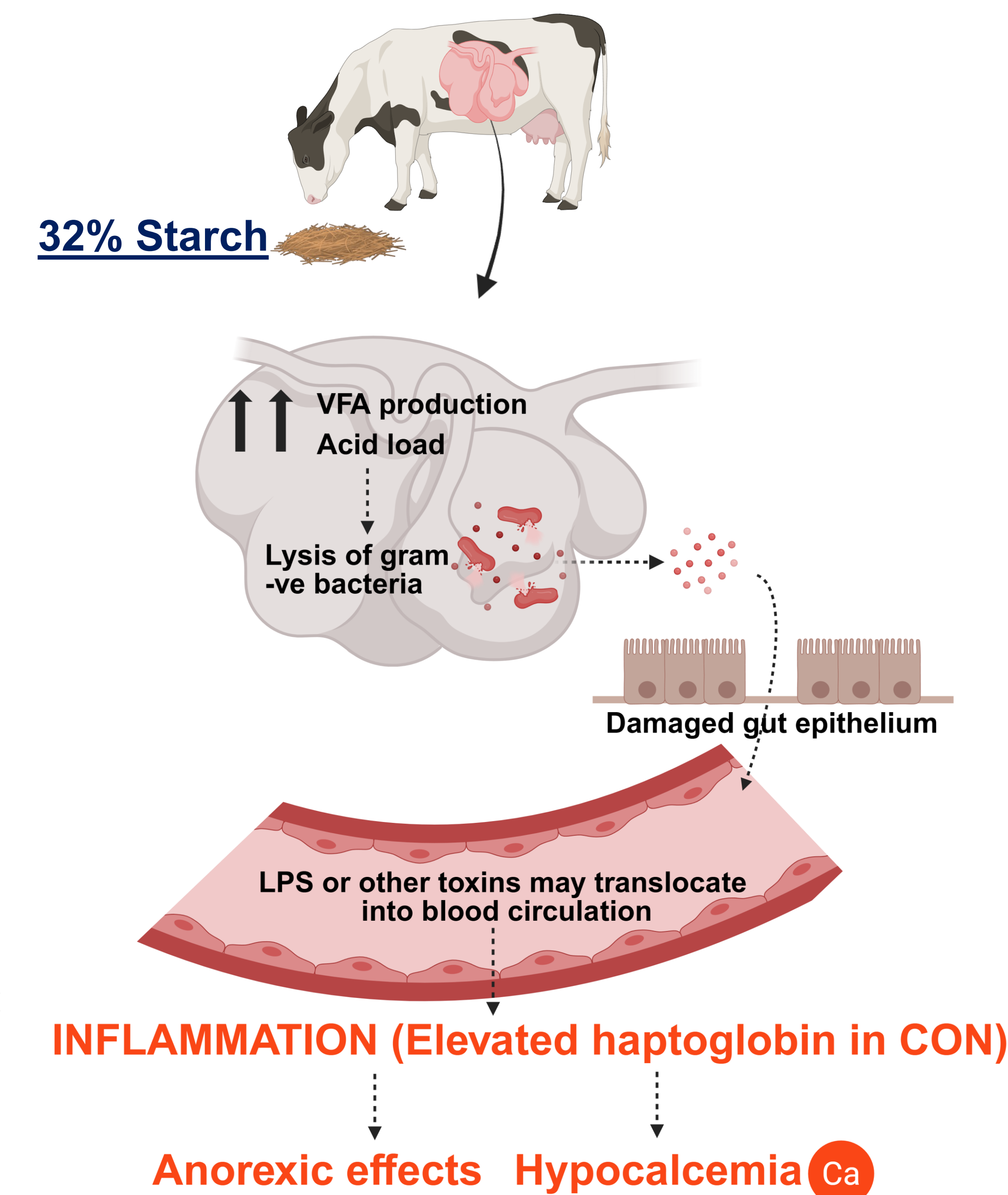


Figure 2. Effect of treatments (TRT) on blood metabolites in pregnant nulliparous cows exposed to high starch challenge. Data were analyzed from days 0.5 to 7 relative to high starch challenge. The day -3 refers to blood sample collected before applying feed restriction and was used as a covariate. The day 0 refers to blood sample collected immediately before providing bolus and exposure to high starch challenge.

DISCUSSION



TAKE AWAY MESSAGE

In response to high starch challenge:

- Haptoglobin increased in CON, indicating greater degree of inflammation
- BOL attenuated Inflammation, indicated by decrease haptoglobin.
- BOL improved blood Ca status