

# Research Summaries 1

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## Changes in rectal temperature, sacrosciatic ligament relaxation, and plasma progesterone concentration 24 hours before parturition in Holstein-Friesian cattle

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### Introduction

Accurate prediction of parturition permits more frequent observation of periparturient dairy cattle and minimizes dystocia-related injuries that lead to animal pain and suffering. The objective of this study was to evaluate the predictive ability of changes in rectal temperature, sacrosciatic ligament relaxation, and plasma progesterone concentration as indicators of parturition within 24 hours in dairy cattle.

### Materials and Methods

Changes in rectal temperature (GLA M700 digital thermometer, GLA Agricultural Electronics), sacrosciatic ligament relaxation (two rulers positioned perpendicularly to each other), and plasma progesterone concentration (Ovucheck® Plasma, Biovet) were evaluated as predictors of parturition in 36 primiparous and 73 multiparous Holstein-Friesian cows. Measurements and samples were obtained daily between 8 and 10 am. Data were analyzed by use of repeated measures ANOVA and values of  $P < 0.05$  were considered significant.

### Results

Mean rectal temperature in primiparous and multiparous cattle at 24 hours before parturition de-

clined by 0.6°F (0.33°C) and 0.5°F (0.28°C), respectively, compared with the mean rectal temperature (mean  $\pm$  SD, 101.7 $\pm$ 0.9°F [38.72 $\pm$ 0.50°C] and 101.6 $\pm$ 0.7°F [38.67 $\pm$ 0.39°C] for primiparous and multiparous cows, respectively) 24 hours previously (ie, 48 hours before parturition). Mean sacrosciatic ligament relaxation in primiparous and multiparous cattle at 24 hours before parturition increased by 4.5 mm and 3.7 mm, respectively, compared with mean sacrosciatic ligament relaxation (mean  $\pm$  SD, 21.8 $\pm$ 7.7 mm and 32.5 $\pm$ 9.7 mm for primiparous and multiparous cows, respectively) 24 hours previously. Mean plasma progesterone concentration in primiparous and multiparous cattle at 24 hours before parturition decreased by 2.9 ng/mL and 2.5 ng/mL respectively, compared with mean plasma progesterone concentration (mean  $\pm$  SD, 6.1 $\pm$ 0.8 ng/mL and 5.8 $\pm$ 1.3 ng/mL for primiparous and multiparous cows, respectively) 24 hours previously.

### Significance

Rectal temperature, sacrosciatic ligament relaxation, and plasma progesterone concentration have clinical utility as predictors of parturition in dairy cattle. Predictive utility could be increased by use of logistic regression, but that would decrease the practicality of the use of a single index to predict parturition within 24 hours.