

Using Bio-Sensors to Measure Activity and Milk Compositional Changes During *Streptococcus uberis* Induced Mastitis

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Automated bio-sensors were used to compare milk constituents and physical activity measures of cows experimentally infected with *Streptococcus uberis* mastitis with those of uninfected cows. Twelve late lactation Holsteins cows were placed into 6 pairs based upon milk production and parity. One cow in each pair was experimentally infected into the right front mammary gland with *Streptococcus uberis*, while the remaining cow in each pair served as an uninfected control. The automated bio-sensor system provided real-time analysis of milk fat, protein, and lactose at each milking. Pedometers were placed on the left front leg of all cows and activity was measured as number of steps taken, bouts of rest, and amount of time resting. Milk compositional data were analyzed as weighted daily averages and activity data were daily totals. Intramammary infections with *Streptococcus uberis* reduced milk yield in experimental cows by approximately 1.6 kg/day compared with control cows the first week after challenge. Lactose percentage in milk was significantly reduced by day three of infection in treatment cows compared with controls, and persisted the next three days. Percentages of fat and protein in milk did not differ between infected and uninfected cows the week after infections were induced. Total steps per day were reduced and minutes resting per day were increased in infected cows compared with control cows the week after experimental challenge. The number of resting bouts did not differ between infected and uninfected cows. These data indicated that the decreased activity in cows with mastitis was due to longer bouts of rest the first week of infection, but the number of times cows rested was comparable between infected and uninfected cows. The use of automated bio-sensors detected changes in milk components and animal activity caused by experimentally induced *Streptococcus uberis* mastitis.