

# Effect of ambient temperature on viral replication and serologic titers following administration of a commercial intranasal modified-live IBR/PI-3 vaccine in beef cattle housed in high and low ambient temperature environments

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## Introduction

The impact of ambient temperature at the time of vaccine administration on viral replication and calf immune response is not well defined. The research objective was to compare serologic response and viral replication following intranasal administration of a modified-live infectious bovine rhinotracheitis (IBR) and parainfluenza type 3 (PI3) vaccine (Nasalgen IP, Merck Animal Health) to beef heifers during periods of high (summer) and moderate ambient temperatures.

## Materials and Methods

Beef heifers (n=28) were randomly allocated to 1 of 4 treatment groups: heifers vaccinated and housed outdoors (HAT), heifers vaccinated and housed indoors (LAT), heifers not vaccinated and housed outdoors (HAC), or heifers not vaccinated and housed indoors (LAC). Following vaccination, nasal and rectal temperatures were recorded every 2 hours for 48 hours, nasal swab specimens were obtained daily for 7 days for virus isolation, and blood samples were collected weekly for 4 weeks to measure serum antibody titers against IBR.

## Results

Mean rectal temperature did not differ among the treatment groups, but mean nasal temperature was higher for heifers in the HAT group, compared with that for heifers in the LAT group at several time points. Two weeks after vaccination, mean serum antibody titer against IBR was significantly higher for heifers in the vaccinated groups (HAT and LAT) than that for heifers in the unvaccinated or control groups (HAC and LAC); however, the mean antibody titer against IBR did not differ significantly between the HAT and LAT groups. On days 1 through 6 after vaccination, IBR was isolated from all vaccinated calves.

## Significance

Results indicated that, following intranasal administration of a modified-live IBR-PI3 vaccine, isolation of IBR and serum antibody titers against IBR did not differ significantly between heifers that were housed outdoors during periods of high ambient temperatures and heifers that were housed in a controlled indoor environment at a moderate ambient temperature.