Vaccination against foot-and-mouth disease deteriorates acute-phase inflammation with anovulation in Hanwoo (Bos taurus coreanae)

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Foot-and-mouth disease (FMD) is a common disease in cattle accompanied with blisters and loss of appetite which leads to economic loss. Vaccination is used to prevent livestock from FMD virus. However, vaccination against FMD has side effects including miscarriage, early embryo death, lower production of milk and decreased growth of fattening cattle. Although, FMD virus vaccines have been reported that loss of early embryo is increased after artificial insemination in cattle, no in vivo studies on the effects of FMDV vaccines within acute-phase inflammation and anovulation in Korean cattle. 100 Hanwoo (Bos taurus coreanae) cows from the Gyeongsangbuk-do Livestock Research Institute synchronized with ovulation were used; only individuals with estrus confirmed by ovarian ultrasound were selected for the test. All test axes are inseminated artificially 21 days after the previous estrus period. The control group was administered normal saline, the negative control was injected intramuscularly with lipopolysaccharide (LPS), and the test group was administered a foot-and-mouth disease virus vaccine 2, 9, and 16 days before artificial insemination. Neutrophils and white blood cells significantly increased 1day after vaccination. In addition, the ovulation rates decreased especially in FMDV vaccine (-2d) group. FMDV vaccine group took 9 days after inoculation for recovering to the normal range of main acute immune response factors. In summary, FMDV vaccine increased expression of acute-phase inflammation response proteins and delayed ovulation with inflammatory cytokines.