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Interferon tau stimulated gene expression: A proxy to predict embryonic mortality in dairy cows

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Abstract

The embryonic mortality in cows is a growing concern for an ever-expanding dairy industry. The current study was an attempt to shorten the open period of dairy cows having suffered embryonic loss by diagnosing them at an earlier stage. The blood samples were collected from the Karan Fries (KF) cows on days 0 (day of AI/estrus), 4, 8, 12, 14, 16, 18, 21, 24, 28, 35 and 42 post insemination. The experimental animals were then categorized into pregnant (P), conception failure/early embryonic mortality (EEM) and late embryonic mortality cows (LEM), based on progesterone assay, ultrasonography and per-rectal palpation. There were 6 animals in each group. The plasma progesterone was higher in pregnant than EEM and LEM cows. Plasma Interferon-tau concentration was significantly ($p<0.05$) lower in LEM than pregnant cows where it could be detected from day 14-21 but was non-detectable in EEM cows. The mRNA expression of ISG15, OAS1, MX1 and MX2 in blood neutrophils was significantly ($p<0.05$) higher from day 8-42 as against day 0 in pregnant cows. The highest expression was observed around day 18-21 in pregnant cows. The ISG15, OAS1, MX1 and MX2 mRNA expression was significantly ($p<0.05$) higher from day 4-42 as compared to day 0 in LEM cows, whereas in EEM cows the expression stayed close to that of day 0 (1.00 ±

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