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Differential Expression of Interferon-Tau Transcripts in Bovine Blastocysts Produced by *In Vitro* Fertilization and Somatic Cell Nuclear Transfer

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Interferon-tau (IFN- τ) is the primary agent responsible for maternal recognition of pregnancy in cattle. Bovine embryos begin to express IFN- τ as the blastocyst forms. Pregnancy recognition in ruminants occurs when IFN- τ from the trophoblast prevents the increase of oxytocin receptors, disrupting luteolytic pulses of prostaglandin (PG) F₂ α by oxytocin. The expression of IFN- τ is strongly associated with the degree of methylation of the CpG islands in promoter region. In this study, we investigated the levels of IFN- τ transcripts and the patterns of DNA methylation of promoter region in the various donor cells. Then, IFN- τ transcripts were also observed on IVF- and NT-derived blastocysts following 7 days cultured *in vitro*. As the result of expression of IFN-tau transcripts by using RT-PCR, the amounts of transcripts were differently detected in the IVF- and NT-derived blastocysts. However, methylation patterns in promoter regions of IFN-tau by bisulfite-sequencing analysis in both blastocysts were also showed similar patterns. When mRNA transcripts of IFN- τ compared with IVF and NT blastocysts, NT blastocysts was some highly expressed than that of IVF embryos. Especially, in different developmental stage, higher expression levels of IFN- τ transcripts in the late blastocyst stage were represented in compared with early blastocyst stage. These results indicates that different expression patterns of IFN- τ in IVF or NT embryos is strongly associated with implantation and maintenance of pregnancy. In conclusion, our findings suggest that variety expression patterns of IFN- τ gene may lead to the different developmental competence to term of IVF- or NT-derived bovine blastocysts produced *in vitro*.

Key words: *Interferon-tau, mRNA, IVF, NT, Bovine embryo*