Epigenetic modification does not determine the time of POU5F1 transcription activation in cloned bovine embryos.

ABSTRACT

Purpose To investigate the effect of epigenetic modification on pattern, time and capacity of transcription activation of POU5F1, the key marker of pluripotency, in cloned bovine embryos. Methods Bovine fibroblasts were stably transfected with POU5F1 promoter-driven enhanced green fluorescent protein (EGFP). This provided a visible marker to investigate the effect of post-activation treatment of cloned bovine embryos with trichostatin A (TSA) on time and capacity of POU5F1 expression and its subsequent effect on in vitro development of cloned bovine embryos. Results Irrespective of TSA treatment, POU5F1 expression was not detected until 8–16 cell stage, but was detected in both inner cell mass and trophectoderm at the blastocyst stage. TSA treatment significantly increased POU5F1 expression, and the yield and quality of cloned embryo development compared to control. Conclusion The POU5F1 expression of cloned embryos is strictly controlled by the stage of embryo development and may not be altered by TSA-mediated changes occur in DNA-methylation and histone-acetylation of the genome.

Keyword: Epigenetic modification; POU5F1; Bovine; Cloned embryos.