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Cloning and Characterization of Bovine 5-Cytosine DNA Methyltransferase I cDNA

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Methylation of DNA 5-cytosine in mammalian early embryo affects great deal in nuclear reprogramming and chromatin remodeling of developing embryo. Current efforts to clone and produce cloned animals including transgenic animals face various problems including low birth rate, irregular development, and so on. In this report, cDNA for the one of house keeping methyltransferase, Dnmt1 was cloned from bovine somatic tissues and was analyzed for its nucleotide sequences to investigate the structure and function of the gene in bovine early development. Nucleotide sequence of bovine Dnmt1 homologue showed 76.8% identity with that of human Dnmt1 and 66.4% with mouse Dnmt1. Translated amino acid sequence showed 88.4% homology with human homologue and 75.8% homology with mouse counterpart. Three types of Dnmt1 are reported in mouse and human, and are likely present in bovine tissues. Understanding of role of Dnmt1 in bovine development may shed a light in the field of animal, especially bovine cloning.

Key words) ***Cloning, Nuclear Reprogramming, Bovine Dnmt1, cDNA***