



Molecular characterization and expression analysis of the Lrh-1 gene in Chinese Hu sheep

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ABSTRACT. Liver receptor homologue 1 (Lrh-1) is a member of the nuclear receptor belonging to the second subfamily of the nuclear receptor family 5A (NR5A), also named NR5A2, which is important for lipid homeostasis, embryogenesis, and regulation of aromatics. The present study aimed to understand the sequence of ovine Lrh-1 and the expression traits in reproductive organ tissues. Initially, we cloned Lrh-1 from the liver of Hu sheep through degenerate primer of reverse transcription-polymerase chain reaction and rapid amplification of cDNA ends. Characteristic functional domains of DNA binding and ligand binding, conserved among transcription factors of the nuclear receptor superfamily, were identified in Lrh-1 of Hu sheep. The Lrh-1 protein levels in the tissues detected by Western blotting correlated significantly with the transcript levels measured by quantitative real-time polymerase chain reaction (qRT-PCR). To understand the Lrh-1 expression change in the hypothalamus and hypophysis during the estrous cycle, we analyzed the expression pattern of Lrh-1 mRNA and protein by qRT-PCR and Western blotting, respectively. This analysis revealed that Lrh-1 expression in the hypothalamus was highest during the metestrus phase, while the Lrh-1 level was similar during other phases. In the hypophysis, the expression was significantly different during the 4 phases of the estrous cycle but highest during the estrus phase,

significantly correlating with FSH concentration. These results indicate that Lrh-1 expression is correlated with gonadotropic hormone secretion, influencing follicular formation in the ovary.

Key words: Lrh-1; Hu sheep; qRT-PCR; Western blot