

Gene Expression of Taurine Transporter and Taurine Biosynthetic Enzyme During Embryonic Development

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Taurine (2-aminoethanesulfonic acid, $^-\text{NH}_3\text{CH}_2\text{CH}_2\text{SO}_3^-$) is endogenous β -amino acid which is essential in fetal nutrition and development and is present in abundant quantities in several tissues of fetus. *In utero*, taurine deficiency causes abnormal development and abnormal function of brain, retina, kidney and myocardium. Thus, transfer of taurine into fetus is important during embryonic development. Taurine transporter (TauT) has 12 hydrophobic membrane -spanning domains, which is typical of the Na^+ - and Cl^- -dependent transporter gene family. Among the various biosynthetic enzymes of taurine, cysteine sulfinic acid decarboxylase (CSD) is the rate-limiting enzyme for biosynthesis of taurine. However, the enzyme activities of taurine biosynthesis are limited in early stage of embryonic development. To analyze the expression period of TauT and CSD during embryonic development, we have investigated the gene expression of TauT and CSD using reverse transcriptase polymerase chain reaction (RT-PCR) in mouse and chicken embryos. RT-PCR analysis revealed that both TauT and CSD mRNAs were already expressed at Day-4.5 in mouse embryo. In chicken whole embryo, TauT and CSD mRNAs began to appear on developing times of 48 hrs and 12 hrs, respectively. TauT mRNA was detected in the organs of heart, brain and eye of the day-3 chicken embryo. Our data show that TauT and CSD mRNAs were expressed in early stage of embryonic development. [This study was supported by a grant No. (R01-1999-000-00128-0) from the Basic Research Program of the Korea Science & Engineering Foundation.]