Taurine Production by Metabolically Engineered *Escherichia coli*

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Taurine has been shown to be essential in various ways; mammalian development and clinical treatment. Mammals are able to synthesize taurine but most mammals have low activity levels of cysteine sulfinic acid decarboxylase (CSAD), which plays a key role in taurine synthesis and are thus more dependent on dietary supplementation of taurine. Due to the dependency of taurine uptake on dietary sources, Approximately, five to six thousands of tons of taurine are produced annually. However, its production has relied on chemical synthesis, which led us to develop a biotechnological method for taurine production. Toward this goal, novel synthetic pathway for taurine production was established in Escherichia coli, and further metabolic engineering was performed. It is the first approach for taurine production using unique synthetic engineering and it gives a good example of metabolic engineering for the production of valuable metabolites. This work was supported by the Korean Systems Biology Research Project (20100002164) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea.