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Prokaryotic expression and purification of CYP2J protein of Bactrian camel

CYP2J enzyme plays a very important role in the metabolism of endogenous and exogenous compounds. The purpose of this experiment is to express CYP2J protein of the Bactrian camel and purify it. Firstly, based on the CYP2J gene sequence of Bactrian camel and the preference of *E. coli* codons, codon of CYP2J gene were optimized and was synthesized. Then, the recombinant expression vector pET-21a-CYP2J was constructed and transformed into *E. coli* BL21 (DE3) competent cells. After recombinant vector was induced by IPTG, the optimal expression conditions were determined by investigating induction temperature and induction time. Finally, the expressed product was purified by Ni-NTA Sepharose Affinity Chromatography and identified by SDS-PAGE and Western blot. The results showed that the recombinant expression vector of PET-21a-CYP2J was successfully constructed. And the best expression condition of CYP2J protein was IPTG concentration of 0.5 mmol/L, induction temperature of 20°C, and induction time of 8 h. The recombinant protein about 55 kD was detected by SDS-PAGE, and the Western blot analysis further proved that the CYP2J protein was expressed successfully. In conclusion, the successful expression of Bactrian camel CYP2J protein laid the foundation for the next monoclonal antibody preparation and determination of Bactrian camel CYP2J enzyme expression and distribution at the protein level.

Recent Publications

1. Karkhanis A, Hong Y and Chan E C Y (2017) Inhibition and inactivation of human CYP2J2: Implications in cardiac pathophysiology and opportunities in cancer therapy. Biochemical Pharmacology 135:12-21.
2. Uehara S, Uno Y and Inoue T (2016) Marmoset cytochrome P450 2J2 mainly expressed in small intestines and livers effectively metabolizes human P450 2J2 probe substrates, astemizole and terfenadine. Xenobiotica 46(11):977-985.
3. Messina A, Nencioni S, Gervasi P G, et al. (2010) Molecular cloning and enzymatic characterization of sheep CYP2J. Xenobiotica 40(2):109–118.
4. Lee C A, Neul D, Clouser-Roche A, et al. (2010) Identification of novel substrates for human cytochrome P450 2J2. Drug Metabolism and Disposition 38:347–356.
5. Surong Hasi, Jirimutu Yao, Siriguleng Yu and Yanan Tian (2018) Diversity and distribution of CYP gene family in Bactrian camel. Functional & Integrative Genomics 18:22-29.

Biography

Surong Hasi is specialized in the research field of Veterinary Pharmacology and Toxicology at the College of Veterinary Medicine, Inner Mongolia Agricultural University (IMAU). In 2004, he was awarded PhD degree on Veterinary Parasitology from China Agricultural University (CAU). He worked as Post-doc at Leuven University, Belgium during 2007-2008. He also worked as a Visiting Scholar at Paris LCH laboratory (2012-2013) and at Texas A & M University (2016). Currently, he is the Director of the Camel Protection Association of Inner Mongolia (from 2013 to at present). His research interests mainly focus on parasitic diseases of domestic ruminants, drug-drug interactions, pharmacokinetics of drugs and camel science. He has published more than 100 papers and abstracts in scientific journals and proceedings of national and international conferences.

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