**Study on pharmacokinetics of siRNA-survivin nano-liposome**

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**Background:** Our previous studies revealed that survivin siRNA nano particles are capable of inhibiting liver cancer, colon cancer and cervical cancer cell growth both *in vitro* and *in vivo*, yet pharmacokinetic parameters are largely unknown.

**Aim:** Aim of this study is to investigate the pharmacokinetics of nano-liposomal survivin siRNA (CL01-si-survivin) and provide important basis for its biosafety evaluation.

**Methods:** Male BALB/c mice (aged eight weeks) were randomly divided into three groups (n=8 for each group). Different doses of CL01-si-survivin were injected via the caudal vein in group A (1 mg/kg), group B (3 mg/kg) and group C (6 mg/kg). Blood samples (0.1 ml each) were collected through eye socket vein after injection at the following time points: 0.083(5 minutes), 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 7, 24, 30 and 48 hours (seven blood sample collections for each mouse). Real-time PCR was performed to detect the plasma concentration of CL01-si-survivin based on the standard curve, which was made via the following protocol: Prepare survivin siRNA solution at the concentrations of 2.0E+07, 2.0E+06, 2.0E+05, 2.0E+04 and 2.0E+03 pg/ml respectively, collect 10 μl of each and another 10 μl plasma from healthy male BALB/c mouse and put them together to 190 μL 0.25% triton X-100 in PBS (TPS), making the final concentrations of survivin siRNA as 1.0E+06, 1.0E+05, 1.0E+04, 1.0E+03 and 1.0E+02 pg/mL then run RT-PCR, taking the logarithm of the plasma survivin siRNA concentration as the independent variable. The average Ct value of each concentration level was dependent variable, the linear regression, the regression equation and correlation coefficient of the standard curve were obtained, and the standard curve was drawn.

**Results:** The peak plasma concentrations in each group, reached at 15 minutes after injections, were 1042538.00, 6837099.54 and 14631333.15 pg/ml, respectively. The plasma concentration decreased significantly after 24 hours. The pharmacokinetic parameters were analyzed. The half-life of CL01-si-survivin in each group was 3.60, 2.64 and 2.80 hours, respectively. The AUC (area under the curve) values were 952190.88, 6800687.79, 13803680.96 hr*pg/ml and the total drug clearance were 1050.12, 441.13 and 434.67 ml/h/kg. Mean residence time (MRT) was 1.70, 1.97 and 2.10 hours respectively.

**Conclusions:** The RT-PCR method was successfully applied to pharmacokinetic study of CL01-si-survivin *in vivo*; The half-life t1/2 at three dosages were closed to 2-4 h. Tmax was similar at 15 minutes; Cmax and AUC were positively correlated to dosage between 1-6 mg/kg; the MRT was close to 1-3 hours.

**Biography**

Suoqin Tang has completed his MD at the age of 23 years from The Fourth Medical University in China and postdoctoral studies from University of Southern California School of Medicine. He is chief physician and professor of Department of Pediatrics, Chinese PLA General Hospital, a famous and one of the best hospitals in China. He has published more than 65 papers both in China and overseas. He is an international member of Childrens Oncology Group(US), standing member of Chinese Pediatric Society, and editor of Chinese Journal of Pediatrics. He is doing clinical work on chemotherapy of leukemia and solid tumors, including lymphoma, neuroblastoma and PNET, his research work focus on target therapy of cancer.

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