Effects of a novel hepatitis B antiviral drug in renal organic acid transporters

Misaki Ishibane¹, Meika Kaneko¹, Shota Saito¹, Sangjon Pae¹, Shinpei Saito¹, Yoshie Reien¹, Yuri Hirayama¹, Hiroaki Mitsuya², Naohiko Anzai¹

¹Dept. Pharmacol, Grad. Sch. Med, Chiba Univ., ²NCGM

In treatment of hepatitis B virus (HBV), it is usually difficult for us to control with emergence of drug resistance. As HBV often reactive after treatment was stopped, patients must keep it for long term. Recently, we have developed E-CFCP, as a candidate drug of HBV for patients with drug-resistant HBV. As it has high antiviral activity and the half-life also is longer, patients can take it in a once-weekly dosing. We expect that E-CFCP can greatly improve the quality of life of patients. However, effects of E-CFCP are unclear in renal. The aim of this study is to clarify the effects of E-CFCP in the kidney, especially organic acid transporter (Organic anion transporters : OATs, Organic cation transporter : OCT). We conducted cell viability studies using mouse-derived renal cortical cells (S2, CCD, cTAL) and uptake studies using radioisotopes to determine the effects of E-CFCP on the kidneys. In cell viability studies, E-CFCP has no cytotoxicity in all cell lines. We also examined the effect of drugs at high concentration using S2 cells. E-CFCP has no cytotoxicity even at high concentrations. In the substrate uptake assay, there was no inhibition of substrate uptake by E-CFCP, the transporter is not involved in the intracellular transport of E-CFCP and is unlikely to cause cytotoxicity. In conclusion, E-CFCP, a novel HBV antiviral drug, is unlikely to cause renal damage. It may be a novel great candidate drug of HBV for patients with drug-resistant HBV.