

The Difference of Pharmacokinetics of Levofloxacin in Rats with Different Drinking Water

Jing LI, Zhan-jie ZHANG, Shao-zong YANG, Yu-wei SONG, Ming-ming YAN & Jun DONG *

College of Food and Drugs, Luoyang Polytechnic,
Luoyang, 471002, PR China

SUMMARY. Through drinking water of different quality for a long time in rats, the relationship between drinking water and the occurrence of kidney stones was studied, and the pharmacokinetics of levofloxacin in different drinking water conditions was discussed. 80 SD rats were randomly divided into 4 groups, 20 rats in each group: a normal control group (purified water), B group (boiled water boiled by tap water), C group (tap water in high incidence area of stone), D stone model group (melamine + purified water). Group A were given with the purified water, group B were given with the boiled tap water, group C were given with the tap water in high incidence area of stone, and group D were given with the purified water and melamine. After 90 days, the rats in each group were given a single dose of levofloxacin 30 mg/kg by gavage. Blood samples were collected from tail vein at different time points after administration. The concentration of levofloxacin in rat plasma was detected by HPLC, the pharmacokinetic parameters were calculated by DAS 2.0, and the differences between the groups were compared. Compared with group A, there was no difference in the kinetic parameters of levofloxacin in group B, C_{max} and $t_{1/2}$ of levofloxacin in group C increased slightly, and there was significant difference in levofloxacin metabolism in Group D. The tap water in the high incidence area of stone could promote the formation of kidney stone, and then affect the pharmacokinetics of levofloxacin *in vivo*.

RESUMEN. A través del agua potable de diferente calidad durante mucho tiempo, se estudió la relación entre el agua potable y la aparición de cálculos renales, y se discutió la farmacocinética de levofloxacina en diferentes condiciones de agua potable. Ochenta ratas SD se dividieron al azar en 4 grupos, 20 ratas en cada grupo: un grupo de control normal (agua purificada), grupo B (agua hervida hervida por agua del grifo), grupo C (agua del grifo en el área de alta incidencia de piedra), D grupo modelo de piedra (melamina + agua purificada). Al grupo A se le administró agua purificada, al grupo B se le administró agua del grifo hervida, al grupo C se le administró agua del grifo en un área de piedra de alta incidencia y al grupo D se le administró agua purificada y melamina. Después de 90 días, las ratas de cada grupo recibieron una dosis única de levofloxacina 30 mg/kg por sonda. Se recogieron muestras de sangre de la vena de la cola en diferentes momentos después de la administración. La concentración de levofloxacina en plasma de rata se detectó por HPLC, los parámetros farmacocinéticos se calcularon por DAS 2.0 y se compararon las diferencias entre los grupos. En comparación con el grupo A, no hubo diferencias en los parámetros cinéticos de levofloxacina en el grupo B, la $C_{máx}$ y $t_{1/2}$ de levofloxacina en el grupo C aumentaron ligeramente, pero hubo una diferencia significativa en el metabolismo de levofloxacina en el grupo D. El agua del grifo en el nivel de incidencia alto de piedra podría promover la formación de cálculos renales y luego afectar la farmacocinética de levofloxacina *in vivo*.

KEY WORDS: levofloxacin, pharmacokinetics, purified water, tap water, urolithiasis.

* Author to whom correspondence should be addressed. E-mail: 969436153@qq.com