

Effect of Ethanol on Toxicokinetics of Paraquat in Rat by Ultra-Performance Liquid-Chromatography Tandem Mass Spectrometry

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SUMMARY. In recent years, there have been reports that many patients who took paraquat together with wine have been rescued. To explore the different toxicological mechanisms among them, we investigated the effect of ethanol on the toxicokinetics of paraquat. In our study, twenty rats were divided into two groups, paraquat group (13.7g/kg paraquat) and paraquat combined ethanol group (13.7 g/kg paraquat and 2.7 g/kg ethanol), ten rats for each group. The paraquat in rat plasma was determined by a sensitive and selective ultra-performance liquid-chromatography tandem mass spectrometry (UPLC-MS/MS). Compared to the paraquat group, the toxicokinetic parameters paraquat combined ethanol group changed, with increases in t_{max} and β , and decreases in C_{max} , α and K_{12} . It suggested that ethanol could slow the absorption, enhance the removal and reduce redistribution of paraquat.

RESUMEN. En los últimos años ha habido informes de que muchos pacientes que tomaron paraquat junto con vino han sido rescatados. Para explorar los diferentes mecanismos toxicológicos entre ellos, investigamos el efecto del etanol sobre la toxicocinética del paraquat. En nuestro estudio, veinte ratas se dividieron en dos grupos, grupo de paraquat (13.7 g/kg de paraquat) y grupo de etanol combinado de paraquat (13.7 g/kg de paraquat y 2.7 g/kg de etanol), diez ratas para cada grupo. El paraquat en plasma de rata se determinó mediante espectrometría de masas en tándem de cromatografía líquida sensible y selectiva de ultra-rendimiento (UPLC-MS/MS). En comparación con el grupo de paraquat, los parámetros toxicocinéticos del grupo de etanol combinado de paraquat cambiaron, con aumentos en t_{max} y β , y disminuciones en C_{max} , α y K_{12} . El etanol podría disminuir la absorción, mejorar la eliminación y reducir la redistribución del paraquat.

KEY WORDS: ethanol, paraquat, poisoning, rat, toxicokinetics, UPLC-MS/MS.

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