Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **33** (9): 1425-9 (2014)

Regular Article
Received: March 13, 2014
Revised version: August 23, 2014
Accepted: August 23, 2014

Effects of Chloral Hydrate on the Activities of CYP450 in Rats Using a Cocktail Approach

Zaishou ZHUANG [1], Hongchang YUAN [2], Yangming ZHEN [3] & Xiangjun QIU [2]*

[1] *Department of Intensive Care Unit, Cangnan People's Hospital, Cangnan County, Wenzhou 325800, China*
[2] *Medical College of Henan University of Science and Technology, Luoyang 471003, China*
[3] *Department of Respiration of the Second Affiliated Hospital, Yuying Children's Hospital of Wenzhou Medical University, Wenzhou 325000, China*

***SUMMARY*. To study the effects of chloral hydrate (CH) on CYP450 activities in rats. Six probe drugs phenacetin, bupropion, metoprolol, tolbutamide, omeprazole and midazolam were used to evaluate the metabolic abilities of CYP1A2, CYP2B6, CYP2D6, CYP2C9, CYP2C19 and CYP3A4 enzymes in 12 rats which were randomly divided into Control-group and CH-group (n=6 each). Each rats of CH-group was given 10% CH aqueous solution 5 mL/kg orally continued 2 weeks. The plasma concentrations of six probe drugs were measured by LC-MS. The pharmacokinetic parameters were calculated by DAS 2.0 program. The results showed there were no statistical differences for phenacetin, metoprolol, midazolam, omeprazol, tolbutamide and bupropion in pharmacokinetic parameters such as $t_{1/2}$, AUC and C_{max}. In conclusion, CH had no effect on the metabolic ability of CYP450 in rat liver after two weeks exposure.**

RESUMEN. Para estudiar los efectos del hidrato de cloral (CH) sobre las actividades del CYP450 en ratas se utilizaron 6 medicamentos sonda (fenacetina, bupropión, metoprolol, tolbutamida, omeprazol y midazolam) para evaluar las capacidades metabólicas de las enzimas CYP1A2, CYP2B6, CYP2D6, CYP2C9, CYP2C19 y CYP3A4 en 12 ratas que fueron divididas aleatoriamente en grupo control-y CH-grupo (n = 6 cada uno). A cada ratas de CH-grupo se le dio 5 mL/kg de solución acuosa al 10% de CH por vía oral durante 2 semanas. Las concentraciones plasmáticas de los 6 fármacos sonda se midieron por LC-MS. Los parámetros farmacocinéticos se calcularon por el programa DAS 2.0. Los resultados mostraron que no hubo diferencias estadísticamente significativas para la fenacetina, metoprolol, midazolam, omeprazol, tolbutamida y bupropion en los parámetros farmacocinéticos tales como $t_{1/2}$, AUC y C_{max}. En conclusión, CH tuvo ningún efecto sobre la capacidad metabólica de CYP450 en hígado de rata después de dos semanas de exposición.

KEY WORDS: Chloral hydrate, CYP450, Pharmacokinetic, Probe drug, Rats.

* Author to whom correspondence should be addressed. *E-mail:* luoyangxiangjun@163.com

ISSN 0326 2383 (printed ed.)
ISSN 2362-3853 (on line ed.)