



## Effect of Concomitant Administration of Amoxicillin on the Pharmacokinetics and Bioavailability of Metformin

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**SUMMARY.** The intestinal absorption of oral antidiabetic drugs in the treatment of type-II diabetes is altered when concomitantly administered with antacids, antinuclear agents, antibiotics and others. In focus, a randomized parallel study in one phase was carried out to evaluate the bioavailability as well as the pharmacokinetic profile of metformin hydrochloride (Met-HCl) administered with amoxicillin trihydrate (AMX). In the present study, six healthy rats per group received 100 mg/kg of Met-HCl solution in distilled water as a control group. Another group of six rats concomitantly received 100 mg/kg of Met-HCl solution and 50 mg/kg of AMX solution. The blood samples were withdrawn at various time intervals up to 8 h. Deproteinised supernatant liquid (100  $\mu$ L) was injected into HPLC for metformin quantitation using a developed and validated bioanalytical method. The pharmacokinetic parameters were calculated based on a non-compartmental model fitting using the WinNonlin software. The obtained results revealed a significant effect of concomitant AMX administration on the pharmacokinetic profile of Met-HCl. Compared to the control group, Met-HCl C<sub>max</sub> and elimination decreased significantly ( $p < 0.05$ ) by AMX intake which might be attributed to the suppression of Met-HCl organic transporter in the gut. Hence, the study suggested a therapeutic drug monitoring of Met-HCl during the simultaneous administration with AMX to avoid any decline in the antidiabetic efficacy of Met-HCl.

**KEY WORDS:** Amoxicillin, Bioavailability, Concomitant administration, Metformin, Pharmacokinetics.

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