

عنوان مقاله:

Evaluation of changes in cytochrome P450 2C19 activity in type 2 diabetic rats before and after treatment, by using isolated perfused liver model

محل انتشار:

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خلاصه مقاله:

Objective(s): Alteration in drug metabolism is very likely in diabetes mellitus. This study assessed changes in CYP2C19 enzymatic activity in the liver using omeprazole as a probe in the animal model of type II diabetes (T2DM) before and after treatment with metformin and cinnamon. Materials and Methods: Twenty-eight male Wistar rats were randomly divided into seven groups. Fourteen days after induction of type 2 diabetic mellitus (T2DM), rats in the test group received metformin, cinnamon, and metformin plus cinnamon daily for 14 days. On day 28, rats were subjected to liver perfusion by Krebs-Henseleit buffer containing omeprazole as a CYP2C19 probe. Perfusate samples were analyzed by HPLC-UV to evaluate the activity of CYP2C19. Results: Mean metabolic ratio of omeprazole was changed from 0.091 ± 0.005 in the control group to 0.054 ± 0.005 in the untreated-diabetic rats. This average was increased inordinately to 0.218 ± 0.036 in the treated rats with metformin. Interestingly, the administration of cinnamon in combination with metformin in diabetic rats caused the enzyme activity to return to (0.085 ± 0.002) approximately the observed levels in the control group (0.091 ± 0.005) . Conclusion: Results showed that despite the suppression of the CYP2C19 enzyme activity in T2DM rats, metformin treatment could increase the enzyme activity. Simultaneous application of cinnamon and metformin can modulate the function of CYP2C19 to the observed level in the control group and make it more predictable to treat diabetes mellitus and fate of drugs that are metabolized by this enzyme.

کلمات کلیدی:

CYP2C19, Cinnamon, Isolated Hepatic Perfusion, Metformin, Phenoconversion, Type 2 diabetes

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