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Enhanced bioavailability of Glimepiride in the presence of Boswellic acids in Streptozotocin-induced diabetic rat model

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The effect of *Boswellia serrata* standardized extract (BSE) and Boswellic acids (BA) on the pharmacokinetics and pharmacodynamics of glimepiride in normal as well as diabetic rats was studied. In normal and streptozotocin induced diabetic rats the combination of glimepiride with BSE and BA increased all the pharmacokinetic parameters, such as C_{max}, AUC_{0-n}, AUC_{total}, $t^{½}$, and MRT, and decreased the clearance, Vd markedly as compared with the control group. In pharmacodynamic studies, the combination of glimepiride with BSE and BA provided significant protection against the diabetes induced alterations in the biochemical parameters. In addition, the combination of glimepiride with BSE and BA also improved the total antioxidant status significantly in diabetic rats compared with BSE, BA and glimepiride alone treated groups. The results revealed that a combination of glimepiride with BSE and BA led to the enhancement of the bioavailability of glimepiride by inhibiting the CYP2C9 enzyme, which suggested that boswellia might be beneficial as an adjuvant to glimepiride in a proper dose, in diabetic patients.

Keywords: CYP2C9, Boswellia serrata standardized extract, boswellic acids, glimepiride, pharmacokinetics, pharmacodynamics.

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