

## Herb - Modern drug interactions

**Ciddi Veeresham**  
Kakatiya University, India

A clear surge in the usage of herbal drugs for preventive and therapeutic purposes is being witnessed for the reason of their naturalism and safety. Though herbal drugs are proven efficacious and safe, in chronic ailments like diabetes and hypertension the usage of conventional drugs has become inevitable. However, this combinatorial usage of conventional and herbal drugs is resulting into side effects, due to their herb-drug interactions. For this reason, healthcare providers and consumers have a definite need to know the possible side effects from these herbal drugs use in combination with conventional drugs.

A large number of *in-vivo* and *in-vitro* experiments and clinical studies have cast light on the possible effects of botanical products and phytochemicals on the many enzymes and transporters involved in gastrointestinal drug absorption. Herbal-drug interactions can be characterized as either pharmacodynamic (PD) or pharmacokinetic (PK) in nature. PD interactions may occur when constituents of herbal products have either synergistic or antagonist activity in relation to a conventional drug. PK interactions result from alteration of absorption, distribution, metabolism, or elimination of a conventional drug by an herbal drug or other dietary supplements.

There are several reports on herb-drug interactions. In pharmacokinetic interaction of *Withania somnifera*, Triphala and its individual components with rosiglitazone in diabetic rats decreased the bioavailability may be attributed to decreased absorption of rosiglitazone in the presence of these herbs or induction of CYP2C8 enzyme which metabolizes rosiglitazone. The pharmacodynamic findings also reveal that there is enhancement in the hypoglycemic activity of rosiglitazone. Piperine and curcumin along with glimepiride in normal and diabetic rats increase in bioavailability due to inhibition of CYP enzyme (CYP2C9) responsible for glimepiride metabolism. Rutin pretreatment increased the bioavailability of glibenclamide in normal and diabetic rats. The increase in bioavailability may be due to inhibition of CYP2C9 enzyme, responsible for glibenclamide metabolism. The pharmacodynamic findings also revealed that there is enhancement in the hypoglycemic activity of glibenclamide. Rutin, monoammonium glycyrrhizinate and gallic acid have significant effect on the rosiglitazone indicating that they may also alter the pharmacokinetics of other drugs metabolized by CYP2C8. In another study, there is a significant herb-drug interaction of *Echinacea purpurea*, *Withania somnifera* and *Sambucus nigra* with zidovudine and also Noni juice and *Ginkgo biloba* with phenytoin and carbamazepine which might be attributed to inhibition of CYP2C9 and induction of CYP3A4 enzymes.

A sound knowledge and a clear understanding of the mechanisms of herb-drug interactions is essential for clinical risk assessment, which in turn provide a vital information to healthcare professionals to minimize risk and ensure the safety of herbal medicinal products.

## Biography

Ciddi Veeresham received his undergraduate degree in pharmacy from Department of Pharmacy, Kakatiya University, Warangal, India. He completed his Master of pharmacy from Birla Institute of Technology, Mesra, Ranchi. He has done his Ph.D. from Kakatiya University, Warangal. He also worked as lecturer in pharmacy before completing Ph.D. at KRES College of Pharmacy, Bidar. In 1991, he joined the faculty at University College of pharmaceutical Sciences, Kakatiya University, Warangal, India. He got overseas associate ship to do postdoctoral research work at Department of Biotechnology, Cornell University, School of Biochemical Engineering, Ithaca, NY, USA and also as UNESCO BAC fellow. He worked as associate Professor of Pharmacognosy and Professor of Pharmacognosy at School of Pharmacy, Addis Ababa University, Addis Ababa, Ethiopia under UNDP Program for 4 years. Presently, he is working at Kakatiya University and produced 13 Ph.D. students and published 90 peer reviewed research papers apart from one book on medicinal plant biotechnology. He is also reviewers for several national and international journals. He worked as principal & head, University College of Pharmaceutical Sciences apart from working as chairperson in Board of Studies in Pharmaceutical Sciences, Kakatiya University, Warangal. He is also the member of many professional organizations, editorial board and board of studies in pharmacy and biotechnology.