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Influence of curcumin on pioglitazone metabolism and pk/pd: Diabetes mellitus

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Abstract

Curcumin is the principal curcuminoid of the popular Indian spice turmeric. Curcumin inhibits CYP 1A1, 1A2, 2B1and 3A4. As turmeric is being consumed every day, it is essential to determine the potential interaction with drugs metabolised by CYP 3A4 system. The study was conducted to determine the potential influence of curcumin on PK/PD of pioglitazone in normal and diabetic rats. Firstly, three groups were used: group 1 group 2 and group 3 composed each of six Male Wistar rats (200-250g) as non diabetic groups. Secondly, three other groups: group 4 group 5 and group 6 were selected similarly to test the effects on diabetic group after receiving alloxan monohydrate (120mg/kg, i.p). Group 1 and group 2; group 4 and group 5 received pioglitazone (10mg/kg; po) and curcumin (60mg/kg; po) respectively. Group 3 and group 6, we tested single dose and multiple dose interaction effects on non diabetic and diabetic rats with curcumin for single day and for eight days. By the end of curcumin pre-treatment pioglitazone was given on the eighth day. 0.8 ml blood samples collected via retro orbital plexus, at the time intervals of 0, 0.5, 1, 2, 4, 8 & 24 hrs and double the volume of sample is replaced with normal saline intra peritoneally and PK&PD parameters were measured. Curcumin significantly increased AUC & AUMC of pioglitazone in both normal and diabetic rats. There was a significant decrease in T max in single dose interaction group in both normal and diabetic rats. Curcumin significantly decreased the metabolism of pioglitazone, the combination has a beneficial effect in diabetes and warrants dose adjustment of pioglitazone.

Biography

Neerati Prasad has completed his Ph.D at the age of 31 years from Kakatiya University. He has published more than 25 papers in reputed journals and serving as an editorial board member of repute. He has successfully completed two Major Research Projects sanctioned by University Grants Commision and All India Council For Technical Education from the Indian Government. His research is strengthened with international collaboration with Deakin University, Australia. He also guided 25 M.Pharm students, presently (5) M. Pharm students, and (3) Research Scholars are working in his research team.