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Study on variations of Theophylline plasma concentrations with respect to time of administration

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۲ The drug of interest in this study is Theophylline, a methyl xanthine commonly used in the treatment of asthma and COPD. L Numerous investigations, demonstrate that pharmacokinetics of theophylline can be quite different following morning and evening administration. The study is aimed to estimate the peak and trough concentrations of theophylline after oral administration at 8 am and 8 pm as well as after IV administration at 6 am and 6 pm, and to assess variations in plasma concentrations with time. Blood samples were taken before and after drug administration at morning and evening, 36 patients were included in the study, 8 were on oral dose of theophylline administered at 8 am and 8 pm. The mean peak plasma concentrations of these patients were $8.914\pm2.139 \ \mu g/ml$ and $8.569\pm1.992 \ \mu g/ml$, higher plasma peak concentrations were observed after the morning 8 am dose. The mean trough concentrations were found to be $4.735\pm1.215 \,\mu$ g/ml and 5.089 ± 1.211 µg/ml after 8 am and 8 pm. The plasma trough concentrations were found to be higher after the night 8pm dose. 28 patients on IV dose of theophylline, were dosed at 6 am and 6 pm, their plasma peak concentrations were observed to be 12.89±2.371 μg/ml and 12.86±2.338 μg/ml. No significant difference was observed after 6 am and 6 pm IV administration. However, the mean trough plasma concentrations were found to be 7.260±1.383 µg/ml and 7.655±1.354 µg/ml. Paired t-test was applied. Patients on IV dose were observed to have higher plasma concentration after the night 6 pm dose. 4 Adverse Drug Reactions of mild nature were reported of which 2 were reports of tachycardia and 2 of restlessness. Hence it can be concluded that time of administration of theophylline influences its plasma concentrations. Night administration will result in higher plasma trough concentration, reduced elimination of theophylline at night time will be of clinical benefit in preventing the bronchial obstruction in at early morning hours in asthmatics.

Biography

Mahvash Iram is working as a faculty of Pharmacy Practice department at AI-Ameen College of Pharmacy, Bangalore and also pursuing her PhD in the field of chronopharmacokinetics. She has got 9 publications to her credit in reputed national & international journals. She has also authored a book with Lambert publications, Germany. Author is serving as assistant editor in ijopp (*Indian Journal of Pharmacy Practice*) and APTI bulletin. She has an excellent academic record with distinction throughout and 2nd rank in her post graduation. She is keen in exploring the pharmacokinetic field further by interacting with renowned experts.

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