Vitamin C, omega-3 and paracetamol pharmacokinetic interactions using saliva specimens as determiners

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Abstract

Background

With its low side effects profile and availability as an over-the-counter drug, paracetamol has been utilized extensively worldwide as an antipyretic and analgesic agent for decades. This is associated with the increasing concern over its ease of access and/or unawareness of the consumers to this issue of paracetamol-induced hepatotoxicity. Paracetamol-induced liver injury today is a big problem where most of the researchers are interested in the possible role of the naturally available antioxidants to ameliorate hepatotoxicity through kinetic interference. So the present study was designed to evaluate the effect of vitamin C and omega-3 on the pharmacokinetic property of paracetamol.

Methods

Six young (average age 29) healthy volunteers participated in the study. The study included three consecutive periods, each of which preceded by overnight fasting and separated by 6 day washout periods. The first period involved the ingestion of a single paracetamol dose. The second one included the ingestion of paracetamol and vitamin C concomitantly, and the final period included paracetamol plus omega-3. Saliva samples were collected and prepared for High-performance liquid chromatography analysis.

Results

There was a significant increase in saliva paracetamol level after 30 min of administration when given concomitantly with vitamin C compared with the remaining groups. No significant differences in the paracetamol concentration profile between the subjects for each group were observed at 60, 90, 120 and 150 min in all treated groups.

Conclusion

Concurrent administration of vitamin C with paracetamol increases significantly the C_{max} level (maximum measured concentration) in saliva and increases the extent of absorption and the possibility of drug-drug interaction and risk of side effects.

Keywords: omega-3; paracetamol; pharmacokinetics; saliva; vitamin C

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