

PP 32 - Effect of Calcium Level in the Drinking Tube Well Water of Urelu West Area Jaffna Peninsula on the Dissolution / Solubility of Ciprofloxacin (BP) tablets

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Background: Calcium concentration in drinking water provides bio availability in human body which is as high as that of milk and milk products. The average daily water intake of a human via drinking is 1.7 L. It is not advised to take the combination of calcium supplements with Ciprofloxacin hydrochloride via oral route as calcium interferes with Ciprofloxacin absorption by forming complex in the stomach.

Objective: The aim of this study was to determine the calcium level present in the tube well water and there effects on the in-vitro dissolution of Ciprofloxacin hydrochloride tablets.

Methodology: Calcium level present in the tube well water of Urelu west area of Jaffna peninsula was determined by EDTA titration. In-vitro drug interaction of Ciprofloxacin Hydrochloride 500 mg oral tablet with calcium was studied according to the United State Pharmacopeia (USP) apparatus II using distilled water as dissolution medium. CaCl₂ was added to the dissolution medium prior to the test which contains an equal amount of Ca²⁺ present in 1.7 L water to create an artificial medium that contains calcium ions.

Results and conclusions: Ca²⁺ present in 1.7 L tube well water was 201.098 mg (118.293 mg/L). Dissolution of oral Ciprofloxacin hydrochloride 500 mg was increased by 17.92% in 10 minutes, 8.4% in 30 minutes, and 2.85% in 50 minutes and decreased by 2.46% in 20 minutes, 5.59% in 40 minutes and 10.10% in 60 minutes of dissolution compared to Ciprofloxacin HCl tablets alone. According to the British Pharmacopeia tolerance level of Ciprofloxacin dissolution should be higher than 80%. This study considered only the percentage reduction and increment in the dissolution of Ciprofloxacin tablet and it shows irregular deviation pattern. So it is important to have in vivo interaction study to correlate in-vitro dissolution.

Keywords: Ciprofloxacin, In-vitro dissolution, water calcium level