Chronopharmacokinetics of theophylline administered as a controlled-release tablet

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The result obtained from different studies of the chronopharmacokinetics of some controlled-release tablets of theophylline are variable, since some authors report differences while others do not. At our laboratory we have developed a formulation of a control-led-release theophylline tablet using acrylic resins and we studied the chronopharmacokinetics of theophylline from this dosage form. Seven Caucasian healthy male volunteers participated in the study approved by the Institutional Review Board (IRB). Each volunteer received a controlled release tablet of 300 mg theophylline and an i.v. dose equivalent to 131.46 mg theophylline once at 8.00 a.m. and once at 8.00 p.m. Theophylline plasma concentrations were determined by HPLC. The following pharmacokinetic parameters were calculated: maximum concentration, time to reach maximum concentration, mean residence time, absorption constant, area under the curve of plasma concentration versus time, distribution volume (Vd?), and total cleara