

# Absorption and disposition kinetics of lithium carbonate following administration of conventional and controlled release formulations

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The absorption and disposition kinetics of lithium carbonate administered to eight healthy volunteers in two dosage forms were studied. A conventional immediate release tablet and a controlled release preparation, developed in our laboratory and containing the drug into a hydrophilic matrix, were employed in the study. Lithium carbonate confers upon the body the distinct characteristics of a two-compartment open model with a mean slow disposition rate constant ( $\lambda_z$ ) of  $0.0435 \text{ h}^{-1} \pm 0.0086$  SD, corresponding to a mean biological half-life of  $16.49 \pm 2.95$  SD. The mean half-life of the distributory  $\lambda_1$ -phase was  $1.40 \pm 0.27$  SD. The apparent volume of distribution ( $V_d(\text{area})$ ) was  $0.539 \text{ l kg}^{-1} \pm 0.130$  SD and the volume of the central compartment ( $V_1$ ) was  $0.224 \text{ l/kg}^{-1} \pm 0.066$  SD, about one half that of the volume at steady state ( $V_d(\text{ss})$ ) which was  $0.455 \text{ l/kg}^{-1} \pm 0.106$  SD. Total body clearance ( $\text{Cl}(\text{B})$ ) was  $0.0241 \text{ l/kg}^{-1} \text{ h} \pm 0.0102$  SD. The administration of the controlled release preparations to the