Population Pharmacokinetics of Paliperidone ER in Healthy Subjects and Patients With Schizophrenia

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ABSTRACT

Purpose To evaluate population pharmacokinetic (PK) models of paliperidone extended-release (ER) tablets in healthy volunteers and patients with schizophrenia.

Methods Paliperidone was administered once daily as paliperidone ER 3, 6, and 15 mg to 31 healthy volunteers and two groups of patients with schizophrenia, with the latter group stratified by the Clinical Global Impressions-Severity of Illness (CGI-S) score. PK parameters were estimated using a population pharmacokinetic analysis of the clinical data. The final model was then evaluated in a simulation study.

Results Data were collected from a total of 58 subjects, 23 of whom received paliperidone ER tablets. The PK characteristics were consistent with the drug's bioavailability and systemic exposure. A two-compartment model with zero-order input and first-order absorption was used to describe paliperidone ER pharmacokinetics. The estimated parameters included the volume of distribution, clearance, and apparent oral bioavailability. The model was validated through a simulation study, and the results were in line with the observed data.

CONCLUSIONS

A two-compartment model with zero-order input and first-order absorption was used to describe the paliperidone ER pharmacokinetics. The model parameters were consistent with the drug's bioavailability and systemic exposure. The model was validated through a simulation study, and the results were in line with the observed data.