COMPARATIVE PHARMACOKINETICS OF 
DIAZEPAM BUCCAL SOLUBLE FILM AND DIAZEPAM RECTAL GEL

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ABSTRACT
Objective: To assess the pharmacokinetics (PK) of Diazepam Buccal Soluble Film (DBSF) compared with diazepam rectal gel (DRG).
Background: DBSF is a novel drug delivery form of diazepam under development for the management of status epilepticus, wake-up epilepsy, or inability to swallow, and was developed to facilitate oral administration in patients with swallowing difficulties. This is a Phase I, single-dose, open-label, randomized, dose-exposure comparison study to assess the PK of DBSF compared with DRG.

Methods: Healthy men and women aged 18-55 (N = 33) were randomly assigned to receive DBSF 15 mg (n = 10), DRG 5 mg (n = 11), DRG 12.5 mg (n = 11), or DRG 20 mg (n = 11) in a single-dose, open-label, randomized, dose-exposure comparison study. Plasma concentrations were measured for diazepam over the first 24 hours after drug administration. PK parameters were used to compare the PK and pharmacodynamic effects of DBSF and DRG.

Results: DBSF and DRG were well tolerated. No serious AEs were reported. The PK parameters of DBSF were similar to those of DRG. The geometric mean area under the curve (AUC) and maximum concentration (Cmax) of diazepam were dose-proportional over the dose range of 5-20 mg for DBSF and DRG. The geometric mean time to maximum concentration (Tmax) was less than dose-proportional with increasing dose of DRG.

Conclusions: DBSF contains diazepam in a dissolvable polymer-based matrix designed to facilitate transport across the buccal mucosa.

Keywords: DBSF, DRG, PK, transmucosal, safety, tolerability, efficacy, status epilepticus

REFERENCES

SAFETY AND TOLERABILITY

• Most AEs of unexpected severity were related to status epilepticus,
• The majority of AEs were related to study drug administration
• The most frequently reported AEs were of mild or moderate severity
• No serious AEs were reported
• The most frequent AEs were nausea, vomiting, headache, and dizziness
• The majority of AEs were related to the study drug
• The majority of AEs were nausea, vomiting, headache, and dizziness

COMPARATIVE PHARMACOKINETICS OF DBSF AND DRG

• DBSF contained diazepam in a dissolvable polymer-based matrix designed to facilitate transport across the buccal mucosa.
• Diazepam Buccal Soluble Film (DBSF) is a novel dosage form of diazepam under development for the management of status epilepticus, wake-up epilepsy, or inability to swallow, and was developed to facilitate oral administration in patients with swallowing difficulties.

TESTS FOR Dose-Proportionality of DRG

• The test is based on the assumption that a linear relationship (DRG 5 mg to 12.5 mg and 12.5 mg to 20 mg) describes the relationship between the plasma concentrations of diazepam and the dose of DRG.

PLASMA CONCENTRATION-TIME CURVES OF DBSF AND DRG

• Plasma concentrations of diazepam were determined in plasma samples collected over the first 24 hours after drug administration.

DIAZEPAM BUCCAL SOLUBLE FILM (DBSF) VS. DIAZEPAM RECTAL GEL (DRG)

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