Tenofovir-DF PK Fact Sheet

Details

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Tenofovir disoproxil fumarate (TDF)</th>
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<tbody>
<tr>
<td>Trade Name</td>
<td>Viread*</td>
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<tr>
<td>Class</td>
<td>Nucleotide Reverse Transcriptase Inhibitor</td>
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<tr>
<td>Molecular Weight</td>
<td>305.2 (as free base)</td>
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</tbody>
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Summary of Key Pharmacokinetic Parameters

Tenofovir disoproxil fumarate is a prodrug which is rapidly converted in vivo to tenofovir and formaldehyde. Tenofovir is converted intracellularly to tenofovir monophosphate and to the active component, tenofovir diphosphate.

Linearity/non-linearity
The pharmacokinetics of tenofovir were independent of dose over the dose range 75-600 mg.

Plasma half life
~12-18 h

Cmax
326 ng/ml (HIV infected patients)

Cmin
64.4 ng/ml (HIV infected patients)

AUC
3324 ng.h/ml (HIV infected patients)

Bioavailability
~25% (fasting)

Absorption
Tenofovir can be taken without regard to food. Administration of tenofovir disoproxil fumarate with a high fat meal increased tenofovir AUC by approximately 40% and Cmax by approximately 14%. However, administration with a light meal did not have a significant effect on the pharmacokinetics of tenofovir.

Protein Binding
<0.7%

Volume of Distribution
~0.8 L/kg

CSF:Plasma ratio
Believed to be low due to anionic charge of the molecule at physiological pH [1].

Semen:Plasma ratio
Found to accumulate in semen at higher concentrations than plasma [2].

Renal Clearance
70-80% as unchanged drug over 72 h following IV administration. 32 ± 10% of administered dose over 24 h following multiple oral dosing with food.

Renal Impairment
Elimination is primarily by renal excretion; exposure to tenofovir increases in patients with renal dysfunction. It is recommended that the dosing interval is modified in patients with creatinine clearance <50 ml/min or in patients who already have ESRD and require dialysis.

Hepatic Impairment
Studies have shown that tenofovir pharmacokinetics were not substantially altered in subjects with hepatic impairment.
### Metabolism and Distribution

- **Metabolised by**: No P450 involvement; 70-80% of an IV dose is excreted unchanged.
- **Inducer of**: N/A
- **Inhibitor of**: MRP1, MRP2, MRP3 [3]. May also compete with other drugs for tubular secretion [1].
- **Transported by**: Renal transport proteins hOAT 1 and 3, MRP4

### References

*Unless otherwise stated (see below), information is from:*


Viread® US Prescribing Information, Gilead Sciences, October 2010.

