Oseltamivir (Tamiflu®)

Class:
Oseltamivir is a neuraminidase inhibitor.

Antiviral Activity:
Oseltamivir has more activity against influenza A than influenza B.

Mechanism of Action:
Oseltamivir is a reversible competitive inhibitor of influenza neuraminidase. Virion release from infected cells and spread with the respiratory tract are inhibited due to blockade of this enzyme.

Mechanism of Resistance:
In vitro resistance to oseltamivir occurs from mutations in either the hemagglutinin or neuraminidase genes, or both. However, resistance emergence due to loss of neuraminidase susceptibility has been uncommonly recognized during therapeutic use of oseltamivir and has not been documented during prophylactic use.

Pharmacokinetics:
Oseltamivir-phosphate (O-phosphate) (Tamiflu®) is a prodrug that was developed to enhance the oral bioavailability of the parent compound and antiviral molecule, oseltamivir-carboxylate (O-carboxylate). O-carboxylate oral bioavailability is low (5%). The absolute oral bioavailability of O-carboxylate from the prodrug averages 79% Plasma protein binding of the prodrug and its active metabolite is low, 42% and 3%, respectively. O-phosphate undergoes rapid, extensive de-esterification conversion by hepatic esterases to O-carboxylate. O-carboxylate is eliminated primarily by glomerular filtration and renal tubular secretion.

Adverse Effects:
Nausea, vomiting, headache and skin rashes are the most common adverse effects.

Dosage:
Capsule 75mg
12mg/ml oral suspension

Treatment:
Adults and children greater than 13 years of age:
75 mg twice daily for five days
Pediatric patients 1 year of age or older:
< 15 kg – 30mg twice daily for five days
16-23 kg – 45mg twice daily for five days
24-40 kg – 60mg twice daily for five days
> 40 kg – 75mg twice daily for five days
Prophylaxis:

Adults and children greater than 13 years of age: 75mg once daily for at least seven days
< 13 years old: Safety and efficacy has not been determined

Disease state based dosing:
Renal Impairment:
CrCl 10ml/min and 30ml/min
Treatment – 75mg QD for 5 days
Prophylaxis – 75mg every other day
CrCl < 10ml/min
No data

Hepatic Impairment:
No dose adjustment necessary

Contraindications/Warnings/ Precautions:
Efficacy in patients who begin treatment after 40 hours of symptoms has not been established.

Drug Interactions:
Drug interactions are seen between oseltamivir and medications that interfere with renal tubular secretion.

Pregnancy:
Category C: Risk unknown. Human studies inadequate.

Monitoring Requirements:
None

Brand names/Manufacturer:
Tamiflu®/Hoffmann La Roche Inc