

Erectile dysfunction: Comparing Viagra® Cialis® and Levitra®

There are currently three phosphodiesterase-5 (PDE-5) inhibitors on the Canadian market for the treatment of erectile dysfunction. **Viagra®** (sildenafil citrate) was the first agent available in March 1999. **Cialis®** (tadalafil), the second agent was introduced in November 2003 and the third agent, **Levitra®** (vardenafil hydrochloride) March 2004. See Table 1 for a general comparison of the agents.

Structure, Potency and Kinetics: Whereas sildenafil and vardenafil have similar molecular structures, tadalafil's is distinctly different. The newer agents, tadalafil and vardenafil have greater potency for PDE-5 than sildenafil. The duration of action is similar for sildenafil and vardenafil, however, tadalafil has the advantage of an extended duration of action.

Adverse effects: Adverse effects related to vasodilation such as headache, flushing and rhinitis/nasal congestion as well as dyspepsia are commonly reported in patients treated with any of the three PDE-5 inhibitors. These effects are dose-related and may be more pronounced with sildenafil compared to the other agents at equivalent doses, due to its lower relative potency, but this has not been studied in published clinical trials to date. Visual disturbances are more commonly reported in sildenafil treated groups, reflecting the lower selectivity for PDE-5 over PDE-6 compared to the other agents.

	Sildenafil Viagra®	Vardenafil Levitra™	Tadalafil Cialis®
Time to Peak (min)	60	40 – 60	120*
Half-life (h)	3 – 5	4 – 5	17.5**
Timing of Doses	Take dose 1h before anticipated sexual activity		Take dose 30 – 60 min prior
Food interactions	Rate of absorption delayed with high fat foods.		Absorption not affected by food
Initial dose	50 mg	10 mg	10 mg
Maximum dose	100 mg	20 mg	20 mg
Maximum frequency	Once/day		
Hepatic Insufficiency	Initiate at 25 mg	Moderate liver disease: initiate at 5mg	Mild/Moderate liver disease: max 10 mg
Renal Insufficiency	CrCl<30 ml/min: initiate 25 mg	No adjustment	CrCl 31-50 ml/min: initiate 5 mg. CrCl<30 ml/min: max 5 mg
= or > 65 y.o.	Initiate at 25 mg	Initiate at 5 mg	No adjustment
Concomitant CYP P450 3A4 Inhibitor	Initiate 25 mg	- Ritonavir: max 2.5 mg q72h - Indinavir/Azole 400mg/d: max 2.5 mg q24h - Azole 200mg/ Erythro: max 5mg q24h	Max 10 mg not less than q72h
Availability	25, 50, 100 mg	5, 10, 20 mg	10, 20 mg