

APPENDIX B (2 pages)

OPIOID AGONISTS
(from Lexi-Drugs Online)

Comparative Pharmacokinetics

Drug	Onset (min)	Peak (h)	Duration (h)	Half-Life (h)	Average Dosing Interval (h)		Equianalgesic Doses* (mg)	
							I.M.	Oral
Alfentanil	Immediate	ND	ND	1-2	-	-	ND	NA
Buprenorphine	15	1	4-8	2-3			0.4	-
Butorphanol	I.M.: 30-60; I.V.: 4-5	0.5-1	3-5	2.5-3.5	3	(3-6)	2	-
Codeine	P.O.: 30-60; I.M.: 10-30	0.5-1	4-6	3-4	3	(3-6)	120	200
Fentanyl	I.M.: 7-15 I.V.: Immediate	ND	1-2	1.5-6	1	(0.5-2)	0.1	NA
Hydrocodone	ND	ND	4-8	3.3-4.4	6	(4-8)	ND	ND
Hydromorphone	P.O.: 15-30	0.5-1	4-6	2-4	4	(3-6)	1.5	7.5
Levorphanol	P.O.: 10-60	0.5-1	4-8	12-16	6	(6-24)	2 (A) 1 (C)	4 (A) 1 (C)
Meperidine	P.O./I.M./S.C.: 10-15 I.V.: ≤5	0.5-1	2-4	3-4	3	(2-4)	75	300
Methadone	P.O.: 30-60; I.V.: 10-20	0.5-1	4-6 (acute); >8 (chronic)	15-30	8	(6-12)	10 (A) 2-4 (C)	20 (A) 2-4 (C)
Morphine	P.O.: 15-60 I.V.: ≤5	P.O./I.M./S.C.: 0.5-1; I.V.: 0.3	3-6	2-4	4	(3-6)	10	60† (A) 30 (C)
Nalbuphine	I.M.: 30; I.V.: 1-3	1	3-6	5		-	10	-
Oxycodone	P.O.: 10-15	0.5-1	4-6	3-4	4	(3-6)	NA	20
Oxymorphone	5-15	0.5-1	3-6				1	10‡
Pentazocine	15-20	0.25-1	3-4	2-3	3	(3-6)		
Propoxyphene	P.O.: 30-60	2-2.5	4-6	3.5-15	6	(4-8)	ND	130§-200¶
Remifentanyl	1-3	<0.3	0.1-0.2	0.15-0.3	-	-	ND	ND
Sufentanyl	1.3-3	ND	ND	2.5-3	-	-	0.02	NA

ND = no data available. NA = not applicable. (A) = acute, (C) = chronic.

*Based on acute, short-term use. Chronic administration may alter pharmacokinetics and decrease the oral parenteral dose ratio. The morphine oral-parenteral ratio decreases to ~1.5-2.5:1 upon chronic dosing.

†Extensive survey data suggest that the relative potency of I.M.:P.O. morphine of 1:6 changes to 1:2-3 with chronic dosing.

‡Rectal

§HCl salt

¶Napsylate salt

Adapted from *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 4th ed, Skokie, IL: The American Pain Society, 1999.

Comparative Pharmacology

Drug	Analgesic	Antitussive	Constipation	Respiratory Depression	Sedation	Emesis
Phenanthrenes						
Codeine	+	+++	+	+	+	+
Hydrocodone	+	+++		+		
Hydromorphone	++	+++	+	++	+	+
Levorphanol	++	++	++	++	++	+
Morphine	++	+++	++	++	++	++
Oxycodone	++	+++	++	++	++	++
Oxymorphone	++	+	++	+++		+++
Phenylpiperidines						
Alfentanil	++					
Fentanyl	++			+		+
Meperidine	++	+	+	++	+	
Sufentanil	+++					
Diphenylheptanes						
Methadone	++	++	++	++	+	+
Propoxyphene	+			+	+	+
Agonist/Antagonist						
Buprenorphine	++	N/A	+++	+++	++	++
Butorphanol	++	N/A	+++	+++	++	+
Dezocine	++		+	++	+	++
Nalbuphine	++	N/A	+++	+++	++	++
Pentazocine	++	N/A	+	++	++ or stimulation	++



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