

Codeine

Class: Analgesic, Narcotic; Antitussive

Pharmacokinetics

Absorption

- i.) Non-genetic
 - a. Formulation: injection (phosphate), oral solution (phosphate), oral tablet (phosphate / sulfate)
 - b. Route of administration: parenteral / oral / rectal
- ii.) Genetic
 - a. No clear genetic factors affecting absorption

Distribution

- i.) Non-genetic
 - a. No clear non-genetic factors affecting distribution
- ii.) Genetic
 - a. No clear genetic factors affecting distribution

Metabolism

- i.) Non-genetic
 - a. Concomitant medications/substances: *CYP2D6*, *CYP3A4*, *UGT2B7* inducers or inhibitors)
 - b. Ethnicity: codeine glucuronidation was lower in Chinese subjects than in Caucasians
 - c. Hepatic impairment: metabolism may be decreased
- ii.) Genetic
 - a. Genetic variation in drug metabolizing enzyme gene(s): *CYP2D6*, *CYP3A4*, *UGT2B7*

Excretion

- i.) Non-genetic
 - a. Ethnicity: plasma clearance was lower and half-life was longer in Chinese compared with Caucasians
 - b. Renal impairment: elimination may be decreased
- ii.) Genetic
 - a. No clear genetic factors affecting excretion

Pharmacodynamics

Receptors

- i.) Non-genetic
 - a. Concomitant medications: opioid receptor agonists/antagonists (may block or enhance therapeutic effects of codeine)
- ii.) Genetic
 - a. Genetic variation in mu opioid receptor gene

Transporters

- i.) Non-genetic
 - a. No clear non-genetic factors affecting transporters
- ii.) Genetic
 - a. No clear genetic factors affecting transporters