

Codeine (methyl morphine) Like Morphine but:

- ♥ **Greater** Bioavailability (**50%**)
- ♥ **Same** antitussive effect وهو استخدام
- ♥ **Less** analgesia (1/5), addiction, Constipation, duration (2-4 h)
- ♥ **Therapeutic uses:**
 - 1- **Anti-tussive:** in dry dangerous cough as post-operative cough.
 - 2- **Analgesic:** in mild or moderate pain $\pm$ aspirin or paracetamol.

Narcotine (Noscipine)

- ♥ # cough center $\rightarrow$ anti-tussive

Narcetine

- ♥ **Produce seizures**

Papaverine

- ♥ **Spasmolytic and vasodilator**

Semi-synthetic morphine derivatives

Heroin (Di-Acetyl Morphine)

- ↳ Highly lipid soluble $\rightarrow$ Conc. in the brain & Short $t_{1/2}$ ($\approx \frac{1}{2}$ h) $\rightarrow$ highly addictive
- ↳ less emetic.
- ↳ deacetylated to morphine.

Apomorphine

- ↳ Direct dopamine agonist $\rightarrow$.
 - Anti-parkinsonian
 - # Prolactin & GH
 - ++ CTZ $\rightarrow$ central emetic استخدام

Tramadol (Not Opioid)

- ↳ **MOA:** central acting analgesic by:
 - weak μ receptor agonist.
 - # serotonin reuptake (main action)
 - # NE reuptake.
- ↳ **Use:**
 - chronic neuropathic pain.
- ↳ **Toxicity:**
 - seizures $\rightarrow$ CI in epilepsy.