الجامعة السورية الخاصة
SYRIAN PRIVATE UNIVERSITY

السنة الرابعة

علم السموم التطبيقي والشرعي

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6م

150

سموم تطبيقية شرعية . الأستاذة الدكتورة أمية حمدة

بحث . الأفيونيات (٢)

(8 صفحات)

- **SPECIFIC OPIOID DERIVATIVES CODEINE**

- **Codeine (methyl morphine) is available in combination with other ingredients as an analgesic .**

- **as an antitussive in prescription cough, cold, antihistaminic, and expectorant formulas.**

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- **About 120 mg of codeine is equivalent to 10 mg of morphine.**

- **The compound produces the same triad of signs and symptoms with high doses, although tolerance and toxicity are less severe.**

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- DIPHENOXYLATE
- A synthetic opiate chemically related to meperidine.
- diphenoxylate is combined with atropine (Lomotil®) for the treatment of diarrhea.
- The toxicity of this combination, therefore, is primarily due to the presence of the anticholinergic.

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- Children are especially sensitive to the effects of atropine, including production of tachycardia, flushing, hallucinations, and urinary retention.
- The narcotic toxicity demonstrates as miosis, respiratory depression, and in severe cases, coma.

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- **FENTANYL**
- **In the 1990s, fentanyl enjoyed increasing popularity as the narcotic of choice among illicit drug users, principally because of its enhanced potency (*China white*).**
- **At 200 times and 7000 times greater potency than morphine,**
- *α-methyl-fentanyl and 3-methylfentanyl also display greater potential for toxicity, respectively. The median lethal dose is about 125μ g for the former and 5 μ g for the latter.**

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- Therapeutically, fentanyl is marketed in the form of medicated patches (Duragesic Transdermal System®) for the management of chronic pain.
- *Depending on the size of the patch and the amount of fentanyl delivered (10–40 cm2 containing 2.5–20 mg total per patch), the transdermal system can release up to 200 g/h.*

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- MEPERIDINE
- **The first synthetic opioid (1939), meperidine is equi-analgesic with morphine.**
- *In the liver, the compound is hydrolyzed to meperidinic acid and normeperidine by carboxy esterases and by N-demethylation and microsomal enzymes, respectively.*
- *Both of the metabolites are active, although they possess half of the analgesic effects and twice the neurotoxic activity.*

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- PENTAZOCINE
- Pentazocine is a benzomorphan derivative of morphine with 3- to 4-times its analgesic
- potency and the same addictive potential.
- It is presumed to exert its agonistic actions at the -k and -δ -receptors and may precipitate withdrawal symptoms in patients taking narcotic analgesics regularly.
- Intravenous injection of oral preparations of pentazocine and tripelenamine, an H1-blocking antihistamine, was a common form of drug abuse.**

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- The tablets were crushed, dissolved in tap water, heated over a flame, and injected.
- The combination purportedly produced an effect similar to heroin at much lower cost.

- Because the method of sterilization was less than optimal, and the solution contained undissolved pieces of tablet binders and fillers, addicted individuals often developed skin decubiti, abscesses, and cellulites.

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- As a consequence, oral pentazocine tablets were replaced with :
- Talwin-N ® (pentazocine plus naloxone) in order to decrease this practice.

- The inhibitory action of naloxone on pentazocine's analgesic effect is experienced only when the tablets are crushed and injected, since naloxone is not absorbed orally.

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- ** The combination of the crushed tablets were known as *Ts and Blues, T* for Talwin® and *Blues* for the large blue color of the antihistamine tablet.

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- PROPOXYPHENE
- A methadone analog, propoxyphene is implicated in cardiotoxicity.
- The parent compound and its metabolite, norpropoxyphene, cause dose-dependent widening of the QRS complex similar to tricyclic antidepressants
- This quinidine-like effect results from inhibition of cardiac fast sodium channels, causing tachy-dysrhythmias.
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- In addition, propoxyphene is frequently used as the napsylate salt in combination with acetaminophen (Darvocet-N®).
- The unique salt form stimulates hepatic mixed function oxidase (MFO) enzymes, increasing the presence of toxic metabolites of acetaminophen.
- Consequently, in chronic repeated administration, it often masks acetaminophen toxicity.

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HYDROCODONE / OXYCODONE

- Hydrocodone and oxycodone are powerful - receptor agonists with addictive and analgesic potential equivalent to morphine and heroine, respectively.
- Hydrocodone is used as an analgesic in oral dosage forms for mild to moderate pain associated with minor surgical procedures, chronic joint and muscle pain, and inflammatory conditions.
- It is also used as an antitussive (in Hycodan®).
- Consequently, its addictive potential is significant when administered chronically.

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- Oxycodone, in combination with aspirin or acetaminophen
- has enjoyed popularity as an effective analgesic for the relief of moderate to severe pain of chronic inflammation and surgery.
- It is particularly useful in the alleviation of chronic pain of many cancers.

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- *By itself, high doses of pentazocine increase plasma epinephrine concentrations, risking the development*
- *of hypertension and increased heart rate.*

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TRAMADOL

- Tramadol is a centrally acting synthetic analog of codeine with low affinity for the receptor.
- It is used for moderate to severe pain control.

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- CLONIDINE
- Clonidine primarily stimulates central postsynaptic α 2-receptors that inhibit neuronal activity and decrease sympathetic overtone.
- Clonidine shares some pharmacological properties (μ-receptors) and clinical features with the opioids.
- Overdose with clonidine occurs within 60- to 90-min after ingestion, producing bradycardia, hypotension, arrhythmias, CNS depression, decreased respiration, and miosis.

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