

**Medicinal Chemistry HW, Lecture 15**

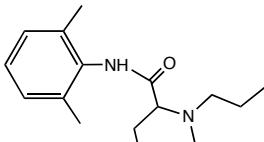
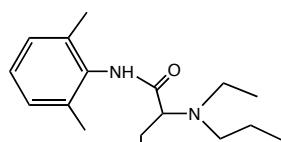
1. Associate each one of the following terms with one of the three phases: pharmaceutical, pharmacokinetic, pharmacodynamic

- (a) absorption
- (b) dosage form
- (c) receptor
- (d) metabolism
- (e) binding site
- (f) elimination
- (g) excipient
- (h) oral administration

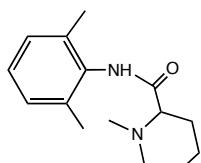
2. Classify each method of drug administration as enteral or parenteral:

- (a) Inhalation
- (b) Subcutaneous
- (c) Rectal
- (d) Intravenous
- (e) Oral
- (f) Topical
- (g) Intramuscular
- (h) Sublingual

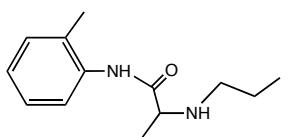
3. Consider the following local anesthetic agents and find the pharmacophore.



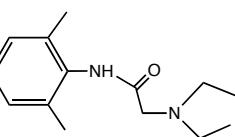
Ropivacaine



Mepivacaine

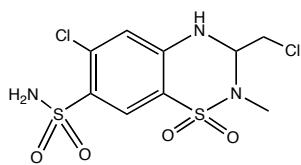


Prilocaine

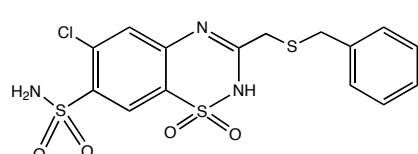


Lignocaine

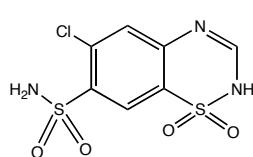
4. Consider the following local anesthetic agents and find the pharmacophore.



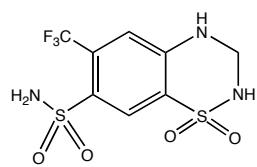
Methyclothiazine



Benzthiazide



Chlorothiazide



Hydroflumethiazide

**Lecture 16**

5. Calculate the therapeutic index of a drug that produces a toxic effect in 50% of the test population at a dose of 85 mg/kg and has a therapeutic effect in 50% of the test population at a dose of 100  $\mu$ g/kg. Is this a better drug than a similar one with a therapeutic index of 100? Justify your answer.

6. Look up the structures of the following drugs and predict if they are soluble in water. If not, what would you do to increase its solubility? Does pH affect the solubility potential?

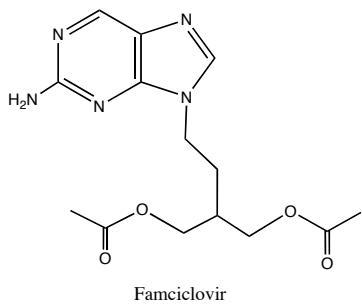
- (a) Ropivacaine (see #3)
- (b) Mephobarbital (or mephobarbital)
- (c) Indomethacin

7. The pKa's of Butorphanol, a potent analgesic in the morphine family, are 7.97 and 10.26.

(a) Keeping in mind that the structure provided is at physiological pH, identify the acidic protons and indicate which pKa goes with which proton.

(b) What is the charge of butorphanol at pH 2? pH 5? pH 11?

8. Propose a structure for the active metabolite of Famciclovir, an antiviral agent. In other words, which bonds are likely to be metabolized and what would be the resultant structure?



9. Calculate the solubility potential of Penicillin G and Isopenicillin N using the solubility potential table from lecture 16.

