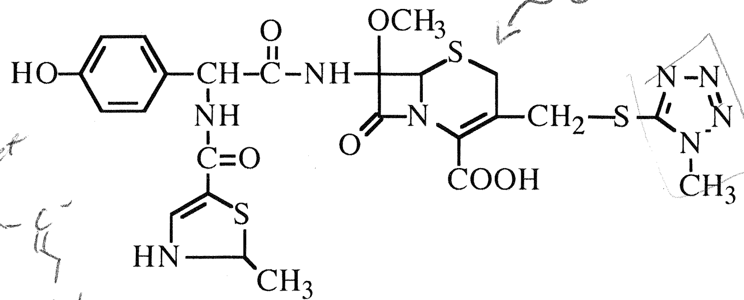
KEY

Medchem 561 **First Exam** **April 16, 2008**

~ 6 member ring, penicillin has 5

methyl tetrazole

cause my ruin GI tract



1. (20) The above structure is an antibiotic under development. It is to be available for oral and IV use. What would you predict would be its therapeutic activity and safety in the following situations. **Explain your reasoning**.

   a. For Johnny, age 2 with Streptococcal pharyngitis. Johnny had an allergic anaphylactic reaction the last time he was given a penicillin.

   2

   Activity: This is a cephalosporin which should have reasonable activity against this Gm + pathogen

   Safety:

   2

   There is relatively low cross reactivity in allergy between pens and cephs but this reaction is too serious to take a chance. Too risky.

   b. For Bill H. with a presumed Staphylococcus aureus (not MRSA) cellulitis?

   Activity: Cephalosporins have activity against MSSA because they are resistant to penicillinase

   Safety: Cephalosporins, like penicillins, have an excellent safety record. Low toxicity.

   c. For Bill H. with a presumed MRSA cellulitis?

   Activity: MRSA altered PBPs would render MRSA resistant to the cephalosporins

   Safety: safe (optional: for parts b, c, d, e you could mention a bleeding risk)

   d. For Harvey Hacker with pneumonia. Sputum cultures isolated a highly penicillin resistant Streptococcus pneumoniae as the presumed pathogen.

   Activity: PRSP altered PBPs would render PRSP resistant to the cephalosporins

   (pg. 16 2. modification of drug-sens. site)

   Safety: safe

   e. For P.G. Boozer, an intoxicated, alcoholic patient with evidence of Gram negative sepsis.

   Activity: Cephalosporins have generally good Gm(−) activity

   Safety: The methyltetrazole moiety (MTZ) would indicate a risk for an disulfiram (Antabuse) effect with alcohol

Gm(+) staph aureus makes penicillase pg. 15 plasmid-encoded beta lactamases pg. a. w/ H. influenzae, N. gonorrhoeae, pg. 13 salmonella, shigella, E. coli