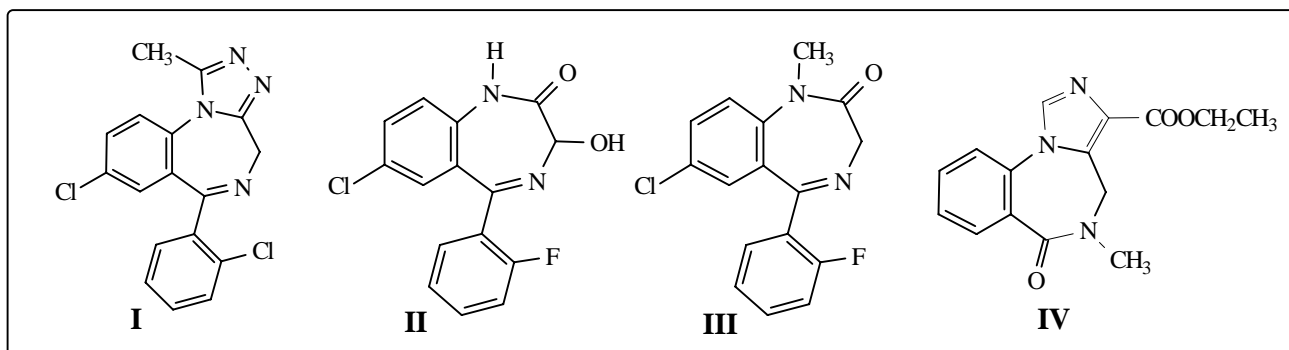


**Sample Exam Questions, Benzodiazepine Drugs**  
**Principles of Drug Action II, 2003**

*Answer questions 1-8 below for the following benzodiazepine derivatives (I-IV):*

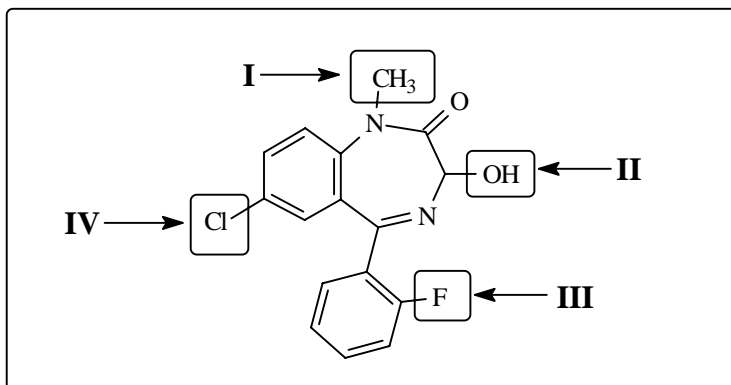


1. Which of the benzodiazepine derivatives shown above (I-IV) produce their therapeutic effects via interaction with benzodiazepine receptors on the GABA receptor complex?
  - A. Only IV
  - B. Only II and III
  - C. Only I, II and III
  - D. All of the benzodiazepines above (I-IV) #
  - E. None of the benzodiazepines above
  
2. Which of the benzodiazepine derivatives shown above (I-IV) can produce sedation as either a desired effect or side effect?
  - A. Only I
  - B. Only I and II
  - C. Only II and III
  - D. Only I, II and III #
  - E. All of the benzodiazepines above (I-IV)
  
3. Which of the benzodiazepine derivatives shown above (I-IV) could be formulated as stable, water soluble salts for IV administration?
  - A. Only I
  - B. Only I and IV #
  - C. Only II and III
  - D. Only I, II and III
  - E. None of the benzodiazepines above (I-IV)

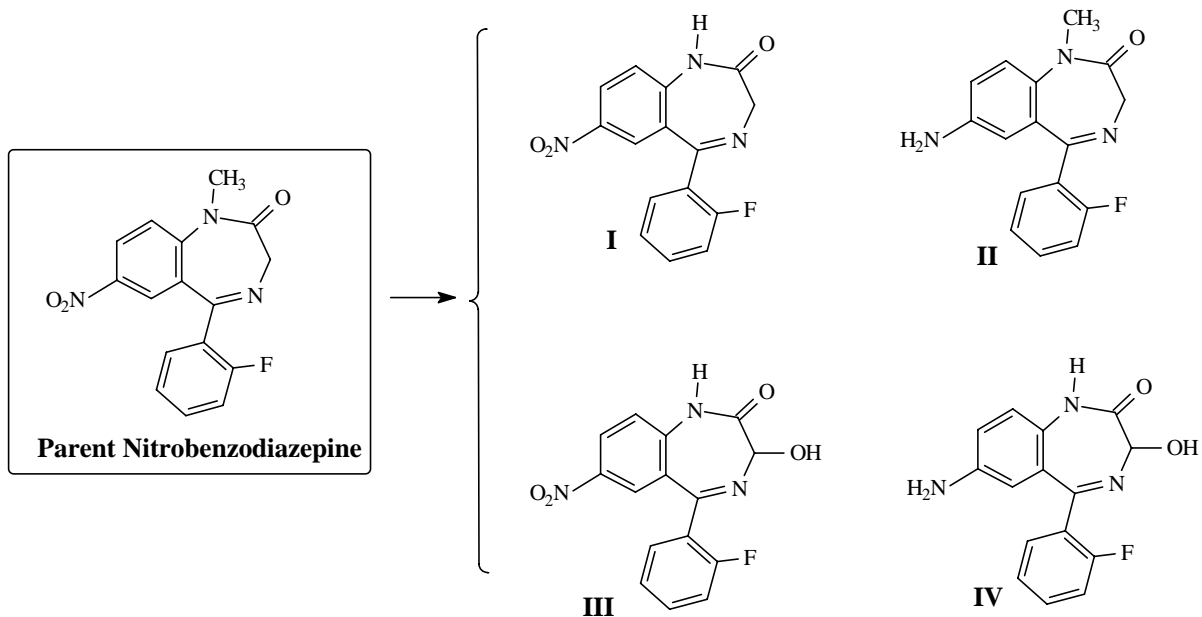
4. Which of the benzodiazepine derivatives shown above (I-IV) require metabolic activation before they can express their therapeutic activity?
- A. Only IV
  - B. Only III
  - C. Only II and III
  - D. Only I and III
  - E. None of the benzodiazepines above (I-IV) #
5. Which relative order below (A-E) correctly ranks the duration of therapeutic effect (from longest to shortest) for benzodiazepines I-IV shown above?
- A. III > I > II > IV
  - B. III > II > I > IV #
  - C. III > IV > II > I
  - D. IV > III > I > II
  - E. I > IV > III > II
6. Which of the benzodiazepine derivatives shown above (I-IV) are ultimately cleared as glucuronide conjugates (more than one metabolic step may occur before glucuronidation)?
- A. Only II
  - B. Only II and III
  - C. Only I, II and III #
  - D. Only II, III and IV
  - E. All of the benzodiazepines above (I-IV)
7. Which of the benzodiazepine derivatives shown above (I-IV) undergo cytochrome-mediated oxidative N-alkylation?
- A. Only III
  - B. Only III and IV #
  - C. Only I and III
  - D. Only I, III and IV
  - E. All of the benzodiazepines above (I-IV)
8. Which of the benzodiazepine derivatives shown above (I-IV) would be appropriate for the treatment of insomnia in an elderly patient with moderate hepatic impairment?
- A. Only I
  - B. Only II
  - C. Only I and II #
  - D. Only I and IV
  - E. Only I, II and IV

9. Which functional groups circled (I-IV) in the benzodiazepine compound shown below are necessary for this drug to bind to benzodiazepine receptors and express its therapeutic effect?

- A. Only III
- B. Only IV #
- C. Only III and IV
- D. Only II, III and IV
- E. All (I-IV) are necessary

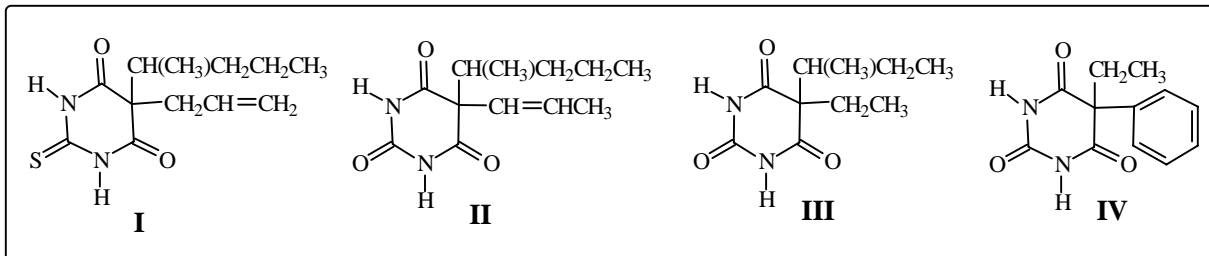


10. Which of the metabolites (I-IV) would be as therapeutically effective as the parent nitrobenzodiazepine shown below?



- A. Only I
- B. Only I and II
- C. Only I and III #
- D. Only I, III and IV
- E. All of the metabolites (I-IV)

Answer questions 11-8 below for the following barbiturate derivatives (I-IV):



11. Which barbiturates above (I-IV) would yield water soluble salts if treated with NaOH?
- Only I
  - Only I and II
  - Only II and III
  - Only II, III and IV
  - All of the barbiturates above (I-IV) #
12. Which barbiturates above (I-IV) would be appropriate for oral long-term treatment of seizure disorders?
- Only I
  - Only IV #
  - Only III and IV
  - Only II and IV
  - Only II, III and IV
13. Which barbiturate above (I-IV) would have the shortest duration of action
- I #
  - II
  - III
  - IV
14. Which barbiturates above (I-IV) would be capable of forming epoxide metabolites by oxidative metabolism (cytochrome-mediated oxidation)?
- Only I
  - Only IV
  - Only I and II
  - Only I, II and IV #
  - All of the barbiturates above (I-IV)