BIO 273: PHARMACOLOGY EXAM #3

November 6, 2001

Questions #1-30. Use the separate answer sheet to indicate the LETTER of the most appropriate SINGLE answer to each question. 
Make sure your NAME is clearly indicated on the answer sheet!

1. Of the anti-neoplastic agents below, the one least likely to produce myelosuppression as a side effect:
   
   A. 5-Fluorouracil (5-FU)  
   B. Vinblastine  
   C. Cyclophosphamide  
   D. Prednisone  
   E. 6-Mercaptopurine (6MP)

2. A 42-year-old female patient is experiencing excessive bleeding because she received too large a dosage of heparin. You can counter this heparin-induced bleeding by administering:
   
   A. Hiruden  
   B. Ticlopidine  
   C. Protamine sulfate  
   D. Tissue plasminogen activator (TPA)  
   E. Prostacyclin (PGI₂)

3. All of the following statements concerning iron therapy for anemia are correct EXCEPT:
   
   A. The judgement on whether or not the iron administration is having a therapeutic effect is made following 3-4 days of iron treatment  
   B. Iron dextran (Infed) is suitable for intravenous iron administration  
   C. Lack of therapeutic effect of oral iron administration could be a sign that the patient has internal bleeding  
   D. The sulfate ferrous salt is absorbed to a similar extent as that of the fumarate ferrous salt  
   E. Lack of therapeutic effect of oral iron administration could be a sign that the patient has a deficit in iron absorption
4. For which of the following anti-neoplastic agents would you be most concerned about **cardiac** side effects (arrhythmia and/or congestive heart failure), to the extent that you might carry out cardiac tests on the patient before administering the drug?

A. Gemcitabine  
**B. Doxorubicin**  
C. Imatinib (STI-571, Gleevec)  
D. 5-Fluouracil (5-FU)  
E. Methotrexate

5. Selective serotonin reuptake inhibitors (SSRIs) are now more commonly prescribed for treating **depression** compared to the older **tricyclic antidepressant** drugs. The **main reason** for this is that:

A. SSRIs work faster than the tricyclics  
B. SSRIs cost less than the tricyclics  
C. SSRIs work better (help a greater % of patients) than the tricyclics ✓  
D. SSRIs don’t inhibit dopamine reuptake, in contrast to the tricyclics ✓  
**E. SSRIs produce fewer side effects than the tricyclics ✓**

6. **High molecular weight** heparin (molecular weight > 15,000) differs from the low molecular weight heparins (LMWHs, molecular weight < 15,000) in that **only the high** molecular weight form:

A. Can cause excessive bleeding ✗  
B. Is given by the oral route of administration ✗  
C. Inhibits factor Xa  
D. Inhibits thrombin (factor IIa) ✓  
E. Can be used for prevention of deep vein thrombosis following hip replacement ✗

7. The “leucovorin (folinic acid) rescue strategy” is used in anti-neoplastic therapy to counter side effects produced by:

A. Cyclophosphamide  
B. Procarbazine  
C. Rituximab  
D. 6-Mercaptopurine (6MP)  
E. Methotrexate ✗
8. An example of an anti-neoplastic drug that produces therapeutic effects by virtue of being a hormone receptor antagonist:

A. Imatinib (STI-571, Gleevec)  
B. Flutamide  
C. Cisplatin  
D. Prednisone  
E. Taxol (paclitaxel)

9. All of the following statements concerning “gene therapy” are correct EXCEPT:

A. Retroviral vectors provide a means to get exogenous DNA incorporated into the host genome  
B. X-linked severe combined immunodeficiency disorder (SCID-X1) has been successfully treated using gene therapy  
C. Adenovirus vectors do not provide a means to get exogenous DNA incorporated into the host genome  
D. Gene therapy is now part of the standard treatment for muscular dystrophy  
E. Liposomes provide a means for getting exogenous DNA into a patient’s cells

10. A 26-year-old male patient is anemic because of low circulating levels of vitamin B₁₂. His physician prescribes treatment with large amounts of folic acid (folate). Which of the following are most likely to occur during chronic administration of the folic acid:

A. Neurological problems such as numbness and tingling  
B. Bleeding ulcers  
C. Worsening of anemic symptoms  
D. Clinical depression  
E. Complete remission of all symptoms

11. All of the following statements concerning benzodiazepines are correct EXCEPT:

A. They are used to treat anxiety  
B. They can produce respiratory depression if combined with alcohol  
C. Flumazenil is an example of a short acting benzodiazepine agonist  
D. They potentiate the increase in chloride permeability produced by GABA acting at GABA<sub>A</sub> receptors  
E. They can impair motor coordination
12. For which anti-neoplastic treatment below would you warn your patient to avoid wine and cheese in their diet?

A. Carmustine  
B. Procarbazine  
C. Beleomycin  
D. Prednisone  
E. Irinotecan

13. All of the following statements concerning anti-neoplastic therapy are correct EXCEPT:

A. A round of treatment kills a constant percentage of cancer cells, not a constant number of cancer cells  
B. Taxol is a cell cycle specific drug  
C. The multidrug resistance gene (MDR-1) allows a cell to cause increased efflux of drugs out of the cell  
D. Trastuzmab (Herceptin) is an antibody  
E. Adjutant therapy refers to the use of anti-neoplastic drugs before surgical removal of a tumor

14. Indicate which of the following statements concerning the blood is CORRECT:

A. The dosage of aspirin required for an antithrombotic effect is greater than the dosage required for an analgesic effect  
B. Streptokinase uses its intrinsic enzymatic activity to convert plasminogen to plasmin  
C. Maximal anticoagulating action by warfarin is usually observed between 6 and 12 hours following initiation of drug therapy  
D. Heparin administration to a pregnant patient is safer for the fetus compared to warfarin administration  
E. Dipyridamole activates platelet cyclic AMP phosphodiesterase, leading to a decrease in platelet cyclic AMP levels

15. All of the following statements concerning hemopoiesis are correct EXCEPT:

A. Granulocyte colony stimulating factor (filgrastin) is used to increase red blood cell count following cancer chemotherapy  
B. Deferoxamine is used as an antidote for iron poisoning  
C. If vitamin B_{12} absorption ceases, it will usually take 2-4 years for symptoms of B_{12} deficiency to appear  
D. Isoniazid-induced sideroblastic anemia can be treated with pyridoxine administration  
E. Insufficient folic acid can produce anemia via insufficient DNA synthesis
16. Match up the numbered anti-neoplastic agents below with the most appropriate single lettered therapeutic mechanism of action. Each lettered mechanism of action may be used once, more than once, or not at all.

16. Tamoxifen –  Est. Block
17. Cyclophosphamide –  alkylator
19. Methotrexate – (ann-mut)
20. Vinblastine
21. Imatinib (STI-571, Gleevec)
22. Mechlorethamine – Are
23. Gemcitabine

A. Inhibitor of microtubule polymerization
B. Topoisomerase I inhibitor
C. Tyrosine kinase inhibitor
D. Pyrimidine analog that can cause DNA termination
E. Estrogen receptor antagonist
F. Antibody against a growth factor receptor
G. Dihydrofolate reductase inhibitor
H. Alkylation Agent

24. All of the following statements concerning affective disorders are correct EXCEPT:

A. Patients taking phenelzine should avoid wine and cheese in their diet
B. Dry mouth is a common side effect in patients taking amitriptyline
C. Patients taking sertraline should avoid also taking a monoamine oxidase inhibitor
D. Reserpine was one of the first drugs used to successfully treat unipolar depression
E. The therapeutic index for lithium is less than 5

25. All of the following statements concerning the blood are correct EXCEPT:

A. Aminocaproic acid inhibits excessive bleeding caused by fibrinolysis
B. Chronic intake of large amounts of vitamin K increases the anticoagulant effectiveness of warfarin
C. Bleeding is a side effect of anistreplase treatment
D. Alteplase possesses serine protease activity
E. Streptokinase produces a greater incidence of allergic reactions compared to urokinase
26. *Allopurinol* is used to decrease excessive uric acid formation during cancer therapy. However, allopurinol also inhibits the *metabolism* of one of the drugs used in cancer therapy, and therefore the dosage of this anti-cancer drug must be significantly reduced if the patient is taking allopurinol. Indicate the anti-cancer drug whose dosage must be *decreased* if the patient is also receiving allopurinol.

A. Taxol
B. Doxorubicin
C. 6-Mercaptopurine (6MP)
D. Cyclophosphamide
E. Vincristine

27. *Combinations* of drugs are often used in cancer therapy. One commonly used combination used for non-Hodgkin’s lymphoma is called *CHOP*, where each letter stands for a particular drug. Indicate which anti-cancer drug is represented by the “C” in CHOP.

A. Cyclophosphamide
B. Cisplatin
C. Carmustine
D. Cytarabine
E. Carboplatin

28. The anticoagulant activity of *warfarin* can be *potentiated* by all of the following *EXCEPT*:

A. Allopurinol
B. Aspirin ✓
C. Imipramine
D. Ticlopidine ✓
E. Phenobarbital ✓

29. The *phase* of the *cell cycle* that is *resistant* to most anti-cancer drug therapies:

A. M phase
B. G₁ phase
C. G₀ phase
D. S phase
E. G₂ phase
30. All of the following statements concerning anti-cancer therapy are correct EXCEPT:

A. D₂ dopamine receptor blockers such as prochlorperazine (Compazine) reduce nausea and emesis produced by anti-cancer therapy
B. Rituximab (Rituxan) is an antibody directed against an antigen found in B-lymphocyte tumors
C. Carmustine is an alkylating agent that gains entry into the central nervous system
D. 5-HT₃ serotonin receptor blockers such as ondansetron (Zofran) reduce nausea and emesis produced by anti-cancer therapy
E. Vincristine’s therapeutic effects occur predominantly during the “S” phase of the cell cycle

END OF PHARMACOLOGY EXAM #3!
BIO 273: PHARMACOLOGY

EXAM #3

Nov. 6, 2001

NAME: [Handwritten name]

1. D
2. C
3. A
4. B
5. E
6. D
7. E
8. B
9. D
10. A

11. C
12. B
13. E
14. D
15. A
16. E
17. H
18. B
19. G
20. A

21. C
22. H
23. D
24. D
25. B
26. C
27. A
28. E
29. C
30. E

20/30 = 67%