QUESTION BANK (VETERINARY PHARMACOLOGY)

PAPER NO. 9

Chemotherapy

I. Name the following:

1) A glucosidase inhibitor.-(Acarbose)

2) An antibiotic having adrenal cortical suppressant action.-(Streptomycin)

3) An immune suppressant used in cancer therapy.-(Cyclophosphamide)

4) Bacteria which can resist the antibacterial action of methenamine.-(Proteus)

5) First antibiotic in tetracycline group synthesised.-(Chlortetracycline/Aureomycin)

6) One antibiotic derived from Lincomycin.-(Clindamycin)

7) One antibiotic related to Kanamycin.-(Neomycin)

8) One diaminopyrimidine antibacterial agent -(trimethoprim)

9) One polyene antibiotic.-(Nystatin, amphotericin-B)

10) One sulphonamide which is inactivated by PABA/pus.—(Mafenide/Marfanil)

11) Penicillinase resistant penicillin.-(Oxacillin, Methicillin.)

12) Scientist who isolated penicillin.-(Chain and Florey)

13) Sulphonamide preferred in urinary tract infection._(Sulphafurazone and sulfisomidine)

14) The sodium salt of sulphonamide which is neutral to pH.-(sulphacetamide)

15) Two tetracyclines which will penetrate the Blood brain barrier easily.-(Minocycline and Doxy-cycline)

16) Two antibiotics which exerts its action by acting as nucleic acid analogues.-(Rifampicin, Quinolones)

17)Two antibiotics which act by binding with 50 S ribosomal subunits.-(chloramphenicol, bacitracin and lincomycin)

18)The drug of choice among tetracyclines in the treatment of meningitis.-(doxycycline and minocycline)

19) Three bactericidal antibiotics.-(penicillin-G, streptomycin, bacitracin, cephalexin)

20) Three topically active sulphonamide.-(sulphacetamide, silversulphadiazine, Mafenide)

21) Three ultralong acting sulphonamide.-(sulphadoxine, sulphamethopyrazine, sulphamethoxy pyridazine)

II.State true or false

1) Absorption of Fluconazole is unaffected by gastric pH.-(T)

2) Alkaline environment helps in the dissolution and absorption of ketoconazole.—(F)

3) All aminoglycoside antibiotics are adequately absorbed orally .-(F)

4) Amphoterecin B is highly nephrotoxic. –(T)

5) Amikacin is an aminoglycoside antibiotic.-(T)

6) Amitraz inhibit the enzyme MAO which is responsible for the metabolism of neurotransmitter amines in ticks and mites.(T)'

7) Among tetracyclins Doxycycline and Minocycline are more distributed to cerebro spinal fluid than others.-(T)

8) Amoxycilline can be given orally but is not penicillinase resistant.-(T)

9) Antiviral drugs have wide margin of safety.—(F)

10) Antifungal therapy usually continued for a long period.-(T)

11) Antacids taken orally with sulphonamide decreases the bioavailability of sulphonamide.-(T)

12) A small amount of crystalline penicillin is added to long acting form of penicillin for reducing the toxicity.-(F)

13) Bacitracin is effective against gram –ve and polymyxin against gram +ve bacteria.-(F)

14) Benzathin penicillin will act for one week once it is injected.-(T)

15) Chloramphenicol readily reaches to therapeutic concentration in C.S.F. irrespective of presence or absence of meningitis.-(T)

16) Cilastatin is an inhibitor of renal tubular dipeptidase.-(T)

17) Cilastatin is added to prevent renal tubular degradation of Imipenem.-(T)

18) Clarithromycin and erythromycin are macrolide group of antibiotics.-(T)

19) Colistin is a polypeptide antibiotic.(T)

20) Chloramphenicol is a bacteriostaic in nature and is the first synthetic antibiotic .-(T)

21) Chloramphenicol inhibits the cell wall synthesis in bacteria.-(F)

22) Chloramphenicol affects mammalian erythropoietic cells by inhibiting peptidyl transferase of mitochondrial ribosome.-(T)

23) Combination of bactericidal drug with bacteriostatic is often result in antagonism.-(T)

24) Combination of bactericidal streptomycin and bacterioststic tetracyclins produce synergestic action, this is an exception to the general rule.-(T)

25) Doxycycline is a high protein binding drug .-(T)

26) Dogs are more sensitive to ketoconazole and hence the chances of liver toxicity is more(F)

27) Erythromycin is not recommended in adult Horse and Rabbits.-(T)

28) Erythromycin is a bactericidal agent.-(F)

29) Erythromycin inhibits protein synthesis by binding reversibly to 30 s ribosomal subunits of sensitive microorganism..-(F)

30) Erythromycin inhibits the microsomal enzymes.-(T)

31) Erythromycin is produced by actinomycetes.-(T)

32) First antibiotic synthesised is chloramphenicol.-(T)

33) Fenazopyridine can be used as a urinary analgesic.-(T)

34) For fungal infection of the skin griseofulvin ointment is the most effective drug .-(T)

35) For antineoplastic therapy drug dose is calculated based on body weight.-(F)

36) Flucytosine and amphotericin are not administered in combination.-(F)

37) Fluorouracil and floxuridine are antimetabolites used in the treatment of cancer.-(T)

38) Gram negative bacteria is resistant to penicillin because of the presence of high amount of betalactamase.-(F)

39) Generally combination of 2 bactericidal drugs are synergestic in nature.-(T)

40) Griseofulvin is a hepatic microsomal enzyme inducer.-(T)

41) Griseofulvin is a hepatic enzyme inducer and increases the metabolism of co-administered drugs-(T)

42) In an isobologram synergism of two drug is shown by a concave curve.-(T)

43) In an isobologram antagonism of two drug is shown by a convex curve.-(T)

44) In antibacterial therapy narrow spectrum drug is more desirable than a broad spectrum agent.-(T)

45) Ketoconazole may inhibit the metabolism of other drugs.(T)

46) Most of the antiviral drugs are viricidal thus no intact immune system is required.—(F)

47) Most antiviral drugs are cell cycle specific.-(T)

48) Methenamine is administered as enteric coated tablets in order to prevent gastric irritation.-(F)

49) Methenamine is administered as enteric coated tablets in order to protect it from gastric destruction.-(T)

50) Mafenide is not inactivated by PABA .-(T)

51) Mafenide is used only topically.-(T)

52) Mezlocillin and azlocillin are examples for acyluredio penicillins.-(T)

53) Methenamine exerts its activity when the urine pH is alkaline.-(F)

54) Many members of the intestinal flora produce antibacterial substance-(T)

55) Methicillin , cloxacillin and Ampicillin are examples for penicillinase resistant penicillin.-(T)

56) Mafenide and silver sulphadiazine is effective against pseudomonas.-(T)

57) N1 acetylation of sulphonamide become water soluble and less toxic .-(T)

58) Organisms which will resist chloramphenicol generally will resist Tetracyclines, Erythromycin, Streptomycin and Ampicillin also.-(T)

59) One international unit of penicillin is the amount of activity in 0.6 micro gram of crystalline sodium salt of penicillin.-(T)

60) Phenazopyridine is useful as a urinary analgesic .-(T)

61) Post antibiotic effect is a favourable response because it will help us to reduce the frequency of administration.-(T)

62) Polymyxin B is produced by bacteria.-(T)

63) Pigs tolerate high dose of Dichlorvos.-(T)

64) Penamecillin is a pro drug of penicillin G.(T)

65) Pyrantel pamoate is very effective in Babesiosis.-(F)

66) Penicillin is excreted mainly by tubular filtration.-(T)

67) Penicillin should not be used in meningitis.-(T)

68) Quinolones are synthetic anti bacterial agents.-(T)

69) Rifampicin and isoniazid are used in the treatment of tuberculosis.-(T)

70) Rapid renal excretion and accumulation of nitrofurans in urine is a favourable qulity for selection of this drug in the treatment of urinary tract infection.-(T)

71) Salicylates block the uricosuric action of probenacid.—(T)

72) Streptomycin is bactericidal in nature.-(T)

73) Streptomycin have a good penetration to brain.-(F)

74)Streptomycin is a narrow spectrum antibiotic.-(T)

75) Succinyl and phthalyl sulphathiazole is a pro drug of sulphathiazole.-(T)

76) Sulphadoxine with pyrimethamine is used as an antimalarial drug.-(T)

77) Sulfinpyrazone inhibit the tubular reabsorption of uric acid.-(T)

78) Sulfinpyrazone ,apyrazolone derivative is a uricosuric agent.-(T)

79) Sulfones are used for the treatment of Hansen's disease.-(T)

80) Sulphadimidine –baquiloprim combination is used clinically in cattle and swine, since the half life of both the compounds are similar.-(T)

81) Streptozotocin can induce diabetes mellitus on intravenous administration.-(T)

82) Sulphonamide have no effect on those microbs which utilise preformed folic acid.-(T)

83) The sulphonamide trimethoprim combination is less active in ruminants than in dogs.-(T)

84) The dose of antineoplastic agents are usually calculated based on the surface area of the body –(T)

85) The important toxicity of vancomycin is Ototoxicity and nephrotoxicity.—(T)

86) The most important side effect of chloramphenicol is on bone marrow producing blood dyscrasia.-(T)

87) Tacrolimus is a macrolide antibiotic produced by *Streptomyces tsukubaensis*.—(T)

88) Tacrolimus has anti-inflammatory and immunomodulatory effect through calcineurin inhibition.—(T)

89) Tetracyclins will act on 30 S sub units of ribosomes.-(T)

90) The absorption of fluconazole is unaffected by gastric pH.-(T)

91) Triamcinolone is recommended in ketosis.-(T)

92) The MIC of both drug in potentiated sulphonamide is reduced against a wide variety of pathogen.-(T)

93) Tetracycline is a broad spectrum antibiotic.-(T)

94) Tetracyclins are contraindicated in young animals.-(T)

95) Tetracycline s are contraindicated in liver disease.-(T)

96) Toxicity of sulphonamide is comparatively more in cattle than dogs,-(T)

III.Fillup the blanks with the most appropriate words

1) Aminoglycosides are excreted through urine almost entirely by the process of…….—(glomerular filtration.)

2) Cats are more susceptible to chloramphenicol toxicity due to deficiency of .....conjugation.-(glucuronide)

3) Duration of action of benzathin penicillin is .....days—(5-7)

4) Fluoroquinolonese are contraindicated in growing dogs because they interfere with growth of ..... -(Cartilage)

5)Few organisms in a population do not grow , remain unaffected by penicillin. such quiescent organism is called.....—(“persisters”)

6) Intracellular storage form of aminoglycosides is.....-(cytosegreosome)

7 In pregnant animals aminoglycoside treatment can cause loss of..... in the foetus.-(Hearing)

8) In pregnant animals tetracyclins can cause inhibition of .....growth in foetus.-(bone)

9) Isolation of.....leads to the development of semisynthetic penicillins.-(6-amino penicilloic acid)

10) Ketoconazole is a .....derivative antibiotic.-(imidazole)

11) One m. g. of penicillin G sodium is equal to .....i.units.—(1667)

12) Optimal antimicrobial action of aminoglycoside antibiotic is obtained at …….pH.-(alkaline)

13) Prolonged use of antimicrobials may cause deficiency of vitamins .....and..... in patients.-(K and B-complex)

14) Prolonged administration of sulphonamide may cause increase in bleeding and clotting time due to inhibition of .....enzyme and subsequent vitamin K deficiency.-(Vit.K epoxireductase)

15) Selective toxicity is unique to .....-(Chemotherapeutic agent)

16) Sulphonamide and chloramphenicol may produce acute haemolysis in patients with ..... dehydrogenase deficiency.-(glucose-6 phosphate)

17) Streptomycin is combined with PAS and .....in the treatment of TB.-(INH)

18) Since warfarin is having .....taste, bate shyness will not develops i rats.-(no)

19) Sulphasalazine contain ..... and .....-(sulphapyridine and 5- amino salicylic acid)

20) Sulphonamides inhibits .....enzyme in the kidney tubule.-(Carbonic anhydrase)

21) Super infection is lowest with .....spectrum antibiotics.-(narrow)

22) The enzyme amidase breaks penicillin at peptide linkage and converts penicillin to ……--(6-amino penicilloic acid.)

23) The earliest known chemotherapeutic agents were of .....origin.-(plant)

24) There is complete cross resistance among members of tetracycline except for .....-(Minocycline)

25) The major portion of bacterial cell wall consist of .....-(Peptidoglycan/ murein)

26) Therapeutic blood concentration of sulphonamide is ...../ml (50 microgram)

27) Teichoic acid is a component of bacterial cell wall and mostly seen with gm .....bacteria.-(+VE)

28) The thick layer of peptidoglycan (murein) in the Gm +ve bacterial cell wall take .....colour while the thin Gm-ve cell wall appear pink.-(purple).

29) .....is the sulphonamide group of drug used in ulcerative colitis.-(Sulphasalazine)

30) .....is the first orally active broad spectrum anti fungal drug.—(Ketoconazole)

31) .....is an atineoplastic antibiotic that is non cell cycle specific.-(Doxorubacin)

32) .....are among the least toxic of all the antimicrobial drugs.-(Penicillins)

33) .....is a macrolide antibiotic.-(Erythromycin)

34) ……is the source of Gentamicin.-(*Macromonospora purpurea*)

35) ……..is the concentration of the antibiotic that produces visible inhibition of bacterial growth in vitro.-(Minimum inhibitory concentration)

IV. Choose the most appropriate answers.

1) Acyclovir is an antiviral agent and it inhibits the viral enzymes.-a) DNA polymerase b) RNA polymerase c) Both d) none of the above.-(a)

2) All the following are betalactam group of antibiotics except a) Penicillin b) Cephalosporins c) Amikacin d) Imipenem.—(c)

3) Alkalinising agents are not commonly incorporated with sulphonamides because of .-a) increase the toxicity b) reduce bacterial spectra c) rapid elimination d) increase crystal urea formation,-(c)

4) Anaplasmosis is treated by a) Kanamycin b)ampicillin c)sulphamerazine d) oxytetracycline.-(d)

5) Antagonist of adrenaline on heart and peripheral resiatance: a) propranolol b) phenoxybenzamine c) phentolamine d) salbutamol.-(a)

6) Antihormone used in cancer therapy a) Tamoxifen b) Mitotane c) Procarbazine d) none of the above. –(a)

7) Bacitracin is used a) parenterally b)only topically c) in gut infection d) intravenously. –(b)

8) Best drug of choice for Babesiosis is a) pyrantel b) piperazine citrate c) thiabendazole d)none of the above-(d)

9) Chloramphenicol was introduced as a choice of drug for a) Tuberculosis b) brucellosis c) leprosy d) none of the above.-(d)

10) Chloramphenicol is a)safe drug for food animals b) used in all cases without side effects c)a dangerous drug not to be given for food animals d)has approved withdrawal periods.-(c)

11) Combination of antimicrobial drugs are used for treatment to a) increase the spectrum of activity b) prevent emergence of resistant strain c) reduce the toxicity of antimicrobials d) all the above.-(d)

12) Development of resistance by microbes is a) due to abuse of drugs only b) selective accumulation by microbes c) acquired by plasmids in most cases d) due to mutation.-(c)

13) Effective antimicrobial therapy depends on a) the use of broad spectrum drug only b) the judicious use of antimicrobial drug c) the use of multiple drug therapy only d) use of newer antimicrobials.-(c)

14) Enzyme used in cancer therapy a) thioguanine b) L-asparaginase c) Teniposide d) none of the above .-(b)

15) Fluroacetate inhibits a) SGOT b)cytochrome c) alpha levulinate d)citric acid cycle.-(d)

16) Griseofulvin is an inhibitor of fungal a) cell wall synthesis b) protein synthesis c) mitosis d) none of the above.-(c)

17) Inhibition of microbial growth with a combination of drugs having their concentrations less than or equal to 25% of the MIC of each drug acting alone can be defined as. a) additive effect b) synergism c) antagonism d) indifference. –(b)

18) In a case of mastitis the pH of milk is a) above 8.5 b) below 3.5 c) around 7.2 d) above 7 .-(b)

19) In general gut acting sulphonamides are a) N4 substitution b) N1 substitution c) Both N1 And N4 substitution d) none of the above.-(d)

20) In renal disease following type of antimicrobial agents are preferred a) extensively metabolized by liver b) excreted in bile c) not excreted via kidney d) all the above.-(d)

21) Nitrofuran is more active in a) Acidic urine b) Basic urine c) neutral urine –(a)

22) One of the following is not a macrolide antibiotic: a) erythromycin b) tylosin c) clotrimazole d) oleandomycin.-(c)

23) Penicillin V is resistant to a) penicillinase b) acid c) both the above.-(b)

24) Phenol is detoxified by a) dealkylation b) glucuronic acid conjugation c) mercapturic acid conjugation d) none of the above.-(b)

25) Potentiated sulphonamide a)have broader antibacterial spectrum b) reduce the chances of development of bacterial resistance, c) reduce the toxicity of each d) reduce the MIC of each e)all the above.-(e)

26) Renal damage caused by sulphonamide can not be minimized by: a) alkalinisation of urine b) intake of fluids c) use of sulphonamide mixture d) acidification of urine .-(d)

27) Rifampin is a derivative of a) Rifamycin A b)Rifamycin A&B c) Rifamycin B d) none of the above.-(c)

28) Safe and effective treatment for giardiasis a) thiabendazole b) nitrofurantoin c) metronidazole d) pyrimethamine.-(c)

29) Scientist who coined the term Chemotherapy a) Paul Ehrlich b) Domagk c) Waksman d) none of the above.-(a)

30) Sulphafurazone is preferred in urinary tract infection because a) the concentration is greatly exceeds that in blood b) rapid excretion c) acetylated form is highly soluble in acidic pH. d) all the above .-(d)

31) Sulphonamide which is used along with pyremethamine in the treatment of malaria.-a) sulphaguanidine b) sulphasalazine c) sulphadoxine d) sulphisoxazole .-(c)

32) Sulphonamides are a) microbicidal drug b)antibiotics from microbial source c) bacteriostatic drug d)narrow spectrum antibiotics.-(c)

33) Sulphonamide for ophthalmic use a)sulphamerazine b) sulphapyridine c) sulphamethaoxazole d) sulphacetamide.-(d)

34) Synthetic pyrithrins are toxic to a) animals b) ticks c) human d) all the above.-(b)

35) Streptomycin is more active in an a) acidic urine b) basic urine c) neutral urine.-(b)

36) Selective antagonist of adrenaline on heart: a) atenolol b) phenoxybenzamine c) phentolamine d) salbutamol.-(a)

37) Systemic antifungal agents a) Amphotericin B and griseofulvin b)Flucytosine c) Ketoconazole and fluconazole d) all the above. –(d)

38) Super infection occurs with the following: a) penicillin b) streptomycin c) tetracycline d) all the above.-(c)

39) The quickly and completely absorbed tetracycline administered orally to dog is , a) oxytetracycline b) chlortetracycline c) minocycline d) doxycycline .-(d)

40) The following drugs are metabolized by acetylation: a) kanamycin b) sulphonamidec) streptomycin d) penicillin.-(b)

41) The following drugs are metabolized by acetylation: a) kanamycin b) sulphonamide c) isoniazid d) both b and c.—(d)

42) The pH of blood following therapy with acetazolamide is : a) acidic b) alkaline c) neutral d)varying depending on the preparation. –(a)

43) The solubility of acetylated sulphonamide is increased by a) increasing pH b) reducing pH c) neutralizing pH d) none.-(a)

44) The toxicity of sulphonamide include a) keratoconjunctivitis sicca, b) hypoprothrombinaemia c) hepatic necrosis, d) aplastic anaemia e) all the above.-(e)

45) The best systemic antifungal agent for keratin tissue is a) copper sulphate b) griseofulvin c) clotrimazole d) DMSO.-(b)

46) The toxicity of fluoroquinolone is influenced by Non steroidal analgesic agent (NSAID) a) increase the toxicity b) decrease the toxicity c) no effect (a)

V.Define/explain the following-

1) Minimum inhibitory concentration (MIC): is the lowest concentration of an antimicrobial drug that prevent visible growth of bacteria when grown against sequentially diminishing drug concentration in vitro.

2) Minimum bactericidal concentration(MBC):It is the lowest concentration of an antimicrobial drug that kills the bacteria.

3) Minimum antibiotic concentration (MAC): it is the concentration of an antimicrobial drug that reduces the growth of an organism in vitro by a factor 10. MAC may be one-quarter or one-tenth of the MIC depending on the drug and the organism.

4) What is horizontal gene transfer: In drug resistance when an organism incorporate genetic material from another organism without being the offspring of that organism is called horizontal gene transfer or lateral gene transfer.

5) What is complete and partial cross resistance in bacteria (two way and one way) cross resistance: Bacteria resistant to one antimicrobial agent are also resistant to a second drug also, eg.resistance between Neomycin and Kanamycin, Erythromycin and Oleandomycin. In one way cross resistance Bacteria resistant to one antimicrobial are also resistant to a second drug ,but resistance to second drug does not lead to resistance to first drug.eg. resistance to Gentamicin leads

to resistace to Kanamycin and streptomycin but resistance to Kanamycin and streptomycin does not lead necessarily extend to Gentamicin.

VI.Write Short notes on :

1)Different Classes of penicillin.

I.Narrow spectrum: 1) Beta lactamase sensitive-a) Acid susceptible eg.penicillin G , penamecilli. b)Acid resistant eg.penicillin V, pheneticillin.

2) Beta lactamase resistant –a)Isoxazolyl eg.cloxacillin, oxacillin . b)Non isoxazolyl eg. meticillin, nafcillin.

II. Broad spectrum 1) amino penicillin-ampicillin,amoxicillin. 2)Ampicillin precursors-hetacillin, becampicillin 3) others –mecillinam, pivmecillinam.

III.Extended spectrum/ antipseudomonal :1) Carboxypenicillins-carbenicillin,ticarcillin 2) Uridopenicillins-mezlocillin, azlocillin 3)piperazine penicillines-piperacillin

IV.Potentiated penicillin/ beta lactamase protected: amoxicillin –clavulanic acid, Ampicillin-salbactem,. Explain one from each.....

2) Transfer of drug resistance in bacteria:-- Resistance is transferred mainly by the following process- transduction, transformation, conjugation. Transduction is a process by which the resistant gene (R-factor) is transferred from drug resistant bacteria to drug sensitive one by a bacteriophage. eg. *stephalococcus aureus* and *streptococc*i to penicillin. In transformation process genetic alterations of a cell will take place resulting from the direct uptake incorporation and expression of exogenous genetic material (exogenous DNA) from its surrounding and taken up through the cell membrane eg. Neisseria resistace to Penicillin. Conjugation is a type of reproductive process in which R –factor is transferred from one Bacterium to another by direct contact through a pilus or bridge .eg. Streptomycin resistance to E-coli.

3) Post antibiotic effect (PAE): it is the persistence of the antimicrobial effect for a longer period (few hours) after brief exposure to or in absence of detectable concentration of an antimicrobial drug, The post antibiotic effect varies with each drug and each organism. The PAE can affect the dosing intervals for some antimicrobials eg. aminoglycosides are given at 12 to 24 hours intervals although their half lives are much shorter.

4) Biphasic effect (Eagle effect).-- it is a phenomenon in which low doses an antibacterial in vitro against certain bacteria produce lysis whereas high doses do not (eg, staphylococci and strepto cocci) This is seen in beta lactam antibiotic and it is believed to be due to the differential sensitivity of the penicillin binding proteins to high dose of B-lactams which inhibit autolysis.

5) Evasion of microbs. :-- It is a phenomenon in which organism may enter or be present in an antimicrobial state, such that all members of the population are destroyed by the antimicrobial except those that happen to be in this state(resistant state,eg. endospores)

6) Superinfection: appearance of a new infection as a result of indiscriminate use of antimicrobials-eliminate or destroy normal bacterial flora in Gastro Intestinal tract, Respiratory tract, Genito-

urinary tract due to antimicrobials- result in certain opportunistic bacteria or fungi to dominate. It is common with broad spectrum antimicrobials like tetracycline. It is most common in immunocompromised patients.

7) Classify sulphonamides: I.Systemically active a) Short acting (less than 12 hours) sulphadiazine, sulphamerazine, sulphathiazole b) Intermediary acting (12-24 hrs) Sulphadimidine, sulphamethoxazole, sulphamoxole. c) Long acting (24-48 hrs) sulpha dimethoxine, sulphamethoxypyridazine, sulphaethoxy pyridazine. d) Ultra long acting (more than 48 hrs) Sulphadoxine, Sulphamethopyrazine.

II. Locally acting : succinyl sulphathiazole, Phthalyl sulphathiazole, Sulphaguanidine.

III. Topically active. Sulphacetamide, Silver sulphadiazine, Mafenide.

8) Potentiated sulphonamides: are combination of Sulphonamide with 2,4- diaminopyrimidines and related agents. Commonly used combinations are sulphamethoxazole and trimethoprim (co-trimoxazole) sulphadimethoxine and ormetoprim, sulphadimethoxine and baquiloprim. Other pyrimidines are also used. Combination depend on their pharmacokinetic properties. The pharmacokinetic parameters of each drug vary with different species, hence preparation of a combination suitable for all species is not possible. Combination increases the spectrum of activity, reduce the toxicity and reduces the development of bacterial resistance.

9. Probenacid: It is a highly lipid soluble organic acid-inhibit renal tubular secretion of penicillin. so its duration of action is increased. It has an opposite effect on uric acid ie. the excretion of uric acid is enhanced. Competitively block an active organic anion transport in renal tubule which normally reclaims uric acid from urine. The inhibition also interfere with the excretion of reabsorption of various other organic molecules and drug –urinary excretion of cephalosporin, sulphonamides ,methotrexate and indomethacin are inhibited. It inhibit the tubular secretion of nitrofurantoin reducing its antibacterial action.

10. Classify antimicrobial drugs depending on their mechanism of action.

a) Agents inhibiting cell wall synthesis- penicillin, cephalosporin, bacitracin, cyclosporine, vancomycin, clotrimazole.
b) Agents inhibiting cytoplasmic membrane function-polymyxin, nystatin, amphotericin B
c) Agents inhibiting protein synthesis-aminoglycosides, tetracyclins, chloramphenicol, macrolides.
d) Agents affecting nuclic acid metabolism and synthesis-quinolones, rifampicin, idoxiuridine ,acyclovir.
e) Agents affecting intermediary metabolism-sulphonamides, trimethoprim, sulphones.

11. **Classify antimicrobials depending on the type of organism/ Therapeutic use (give examples)**

a) Antibacterial –Penicillins, Aminoglycosides
b) Antifungal-amphotericin B, Griseofulvin
c) Antiviral- Vidarabin, Idoxuridine
d) Antiprotozole, Quinapyramine
e) Anthelmintics- Albendazole, Levamisole

f) Ectoparasiticide- Cypermethrin, Lindane.

12. Ionizing radiation in cancer therapy. Radiation interfere with atoms and molecules and leads to their excitations and ionization. In irradiated tissues a verity of chemical radicals from water are formed that can further interact with altered irradiated protein and nucleic acid and leads to cell damage. This damage is often first expressed when cellular division occurs. Sodium phosphate (P 32)supplied as a solution for oral use as well as injection. Half life is only 14.3 days. The emitted beta particle of P-32 penitrate to an average depth of 2-8 mm of the tissue. The material will enter particularly those tissue in which the metabolic turn over of phosphorus group is high as in cells of bone marrow, spleen, lymph nodes, in which cell reproduction is also high. Ultimately P 32 leaves the soft tissues through turnover the bone become the most radioactive tissues. Used in some cases of chronic granulocytic leukemia. Gold 198 is a short lived isotope of gold (half life is 2.7 days) emit beta and gamma partices . given in to closed serous cavities particularly in the palliative treatment of peritoneal and pleural effusions caused by metastatic neoplasm. Another isotope is sodium iodide 131 and 125.

VII. Write essays on.

1.Classify fluoroquinolones with examples , explain its mechanism of action and adverse effects.

2.Explain how protein synthesis takes place in bacteria and how different antibacterial drug inhibits protein synthesis.

3.Discuss how bacteria develops resistance against drugs. Explain the mechanism by which resistance is transferred among bacteria.

Courtesy:

Dr. Chandrasekharan nair A.M.

Professor Pharmacology (rtd)

COVAS, Mannuthy, Thrissur, Kerala.