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Protein Synthesis is an essential requirement for any cell.It involves the use of ribosomes which translates the mRNA code to a functioning protein.

In prokaryotes,such as bacteria; protein synthesis occurs during ribosome transfer RNA(tRNA) which is charged with an amino acid that binds to the mRNA template.The subsequent binding of each tRNA charged with an amino acid takes part in the formation and elongation of cellular amino acid.

TETRACYCLINES ANTIBIOTICS.

Tetracycline was discovered in the 1940’s and they are broad spectrum agents exhibiting activity against a wide range of microorganisms including the gram negative and gram positive bacteria(such as Chlamydiae,

Mycoplasmas etc).They are inexpensive and they have been used in the prevention and treatments of many human infections. The first tetracycline resistant bacterium Shigella dysenteriae was isolated in 1953.Its resistance now occurs in increasing pathogenic opportunistic and commensal bacteria.

     Mechanism Of Action.

They inhibit the 30s ribosomal subunit which hinders the binding of the aminoacyl-RNA to the acceptor site on the mRNA ribosome complex which results in the inability of the cell to grow and further replicate in the host cell.Tetracyclines are bacteriostatic in action.

     Indication Of Use.

It is a class of broad spectrum of antibiotics that is used in the management,treatment and prevention of many infections.

Naturally occurring drugs in this class includes tetracycline,chlortetracycline,

oxytetracycline,demeclocycline.

Semi-synthetic tetracyclines are lymecycline,methacycline,minocycline,doxycycline etc.

There is one glycylcycline subclass agent named tigecycline.The other classes of newer tetracycline include ervacycline etc.

These drugs are used in the treatment of;

-Rickettsiae infections.

-Amebiasis.

-Actinomycosis.

-Brucellosis.

-Pelvic inflammatory disease.

-Syphillis.

-Travellers diarrhea.

-Early Lyme disease.

-Whipple disease.

-ETC.

     They also cover for Mycobacterium marinum,Mycoplasma pneumonia,

Staphylococcus aureaus(including methicillin resistant S. aureaus).

Other indications of tetracycline includes rheumatoid arthritis,cancer,

cardiovascular disease.

    Toxicity.

High dosage of tetracycline can result to  life failure(liver damage,kidney damage,phototoxicity,superinfection etc) and then death.They are not dialyzable,thus support measures are initiated and the medication is discontinued.

   Adverse Effects.

-They commonly cause Gastrointestinal distress including abdominal discomfort,epigastric pain,nausea,

vomiting and anorexia.

-While taking tetracycline there may be discoloration of the teeth and inhibition of the bone growth in children

-Some patient may experience photosensitivity which can manifest ad red rash or skin blisters.

Note:

Photosensitivity can be lessened through avoidance of direct sunlight and tanning equipment or by wearing sunscreen and protective clothes outdoors.

-Rarely,it can cause hepatotoxicity and may make worse pre-exciting renal failure.