17/mhs06/047

Nweke Chidera Ayomide

PHA 302

**Question**

1. Write on a named protein synthesis inhibitors stating it’s mechanism of action, indication for use, toxicity and adverse effects.

**Answer**

**Chloramphenicol**

Chloramphenicol is a bacteriostatic broad-spectrum antibiotic that is active against both aerobic and anaerobic gram-positive and gram-negative organisms.

**Mechanism Of Action**

Chloramphenicol blocks proper binding of 50S site which, stops protein synthesis. It does inhibit mitochondrial ribosomal protein synthesis because these ribosomes are 70S, the same as those in bacteria.

* It hinders the transfer of the elongating peptide chain to the newly attached amino acyl tRNA at the ribosome mRNA complex.
* It specifically attaches to the 50S ribosome and therefore hinder the access of aminoacyl-tRNA to the acceptor for amino acid incorporation and prevents formation of peptide bond

**Adverse Reactions**

1. **Gastrointestinal** **disturbances**: Adults occasionally develop nausea, vomiting, and diarrhea.
2. **Bone marrow disturbances**: Chloramphenicol commonly causes a dose-related reversible suppression of red cell production at dosages exceeding 50 mg/kg/d after 1-2 weeks.
3. Aplastic anemia is a rare consequence of chloramphenicol administration by any route. It is an idiosyncratic reaction unrelated to dose, though it occurs more frequently with prolonged use.

**Toxicity for newborn infants:**

Newborn infants lack an effective glucuronic acid conjugation, mechanism for the degradation and detoxification of chloramphenicol. Consequently, when infants are given dosages above 50 mg/kg/d, the drug may accumulate, resulting in the gray baby syndrome, with vomiting, flaccidity, hypothermia, gray color, shock, and collapse.

**Indication For Use**

The original indication of chloramphenicol was in the treatment of typhoid, but the now almost universal presence of multiple drug-resistant Salmonella typhi has meant it is seldom used for this indication except when the organism is known to be sensitive. chloramphenicol may be considered mainly for treatment of serious rickettsial infections, bacterial meningitis caused by a markedly penicillin-resistant strain of pneumococcus or meningococcus,