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**Course code:** PHA 302

**Matric No**: 16/MHS06/060(CARRY OVER)

**Question**

Write on a named bacterial protein synthesis inhibitor, stating its mechanism of action, indication for use, toxicity and adverse effects.

**ANSWER**

**Clindamycin** is an antibiotic used for the treatment of a number of bacterial infections, including bone or joint infections, pelvic inflammatory disease, strep throat, pneumonia, middle ear infections, and endocarditis. It can also be used to treat acne, and some cases of methicillin-resistant Staphylococcus aureus

**Mechanism of Action**

Clindamycin prevents peptide bond formation, thereby inhibiting protein synthesis by reversibly binding to 50S ribosomal subunits. Depending on the organism, infection site, and drug concentration, clindamycin may be a bacteriostatic or bactericidal antibiotic.

When taken orally, absorption cannot take place until clindamycin palmitate becomes hydrolyzed in the gastrointestinal (GI) tract. It then distributes across the body in tissue and other regions containing blood. Clindamycin cannot efficiently penetrate meninges very well and is therefore not an antibiotic of choice for infections of the cerebrospinal fluid (CSF). As it travels through the bloodstream, clindamycin is primarily bound to protein.

Clindamycin is primarily metabolized in the liver by CYP 3A4 (major) and CYP 3A5, which oxidize the antibiotic into clindamycin sulfoxide (primary metabolite) and N-desmethyl clindamycin respectively. When administered orally, the antibiotic peaks within 60 minutes. When given intramuscularly (IM), the drug achieves peak concentrations in 1 to 3 hours. The half-life of clindamycin is approximately 3 hours in adults and approximately 2.5 hours in children, at which point it is excreted in the urine (major) and feces (minor) as active and inactive metabolites.

**Indication of Use**

Clindamycin is indicated in the treatment of serious infections caused by susceptible anaerobic bacteria.

Clindamycin is also indicated in the treatment of serious infections due to susceptible strains of streptococci, pneumococci, and staphylococci.

**Toxicity**

The most common adverse effects that occur with clindamycin toxicity are GI or allergic. There is no antidote for clindamycin toxicity, and the adverse effects will resolve with dose adjustment or discontinuation of the antibiotic.

**Side Effects**

* Nausea
* Vomiting
* Stomach pain
* Mild skin rash
* Unpleasant or metallic taste in the mouth
* Joint pain
* Pain when swallowing
* Heartburn
* White patches in the mouth
* Thick, white vaginal discharge
* Burning, itching, and swelling of the vagina

**Serious side effects may include**:

* Peeling or blistering skin
* Rash
* Hives
* Itching
* Difficulty breathing or swallowing
* Hoarseness
* Swelling of the face, throat, tongue, lips, eyes, hands, feet, ankles, or lower legs
* Yellowing of the skin or eyes
* Decreased urination