17/MHS06/051

MACROLIDES(BACTERIAL PROTEIN SYNTHESIS INHIBITOR)

The macrolides are a class of natural products that consist of a large macrocyclic lactone ring to which one or more deoxy sugars, usually cladinose and desosamine, may be attached. The lactone rings are usually 14-, 15-, or 16-membered. Macrolides belong to the polyketide class of natural products. Macrolides are a category of antibiotics, which are medications that are used to treat bacterial infections.

Macrolide antibiotics are:

azithromycin (brand name Zithromax),

clarithromycin (brand names Klacid and Klacid LA),

erythromycin (brand names Erymax, Erythrocin, Erythroped and Erythroped A),

spiramycin

telithromycin (brand name Ketek).

MECHANISM OF ACTION

- Prevent transfer of the growing polypeptide chain within the 50S site so a new charged tRNA, so the micro-organisms cannot bind to the ribosome so, stops protein synthesis.

- The mechanism of action of macrolides is inhibition of bacterial protein biosynthesis, and they are thought to do this by preventing peptidyltransferase from adding the growing peptide attached to tRNA to the next amino acid (similarly to chloramphenicol) as well as inhibiting ribosomal translation. Macrolides work by binding to a specific subunit of ribosomes (sites of protein synthesis) in susceptible bacteria, thereby inhibiting the formation of bacterial proteins.

INDICATION FOR USE

- Macrolide antibiotics are used to treat a wide variety of mild to moderate bacterial infections, which can usually be treated in pill form. If the infection is severe, some of the macrolide antibiotics can be given intravenously, meaning through a plastic catheter that is inserted into the patient's vein.

- Macrolide antibiotics can be used to treat respiratory infections, which include pneumonia, pharyngitis, sinusitis, and bronchitis. This class of antibiotics can also be used to treat gastrointestinal tract, ear, and skin infections, as well as sexually transmitted diseases.

- It is important to review the patient's allergies in order to confirm that he or she is not allergic to any macrolides.

TOXICITY

- Macrolide antibiotics are commonly prescribed treatments for drug-resistant bacterial infections; however, many macrolides have been shown to cause liver enzyme elevations and one macrolide, telithromycin, has been pulled from the market by its provider due to liver toxicity.

ADVERSE EFFECTS

- Serious side effects, including allergic reaction and cholestatic hepatitis (inflammation and congestion of bile ducts in the liver), are generally associated only with the use of erythromycin.