EKEH CHERECHI

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(1) Drug inactivation or modification

(2) Alteration of target site

(3) Alteration of metabolic pathway

(4).Reduced drug accumulation

**1.Drug inactivation or modification**: e.g., enzymatic deactivation of Penicillin G in some penicillin-resistant bacteria through the production of β-lactamases.

**2.Alteration of target site**: e.g., alteration of PBP — the binding target site of penicillins — in MRSA and other penicillin-resistant bacteria.

**3.Alteration of metabolic pathway**: e.g., some sulfonamide-resistant bacteria do not require para-aminobenzoic acid (PABA), an important precursor for the synthesis of folic acid and nucleic acids in bacteria inhibited by sulfonamides. Instead, like mammalian cells, they turn to utilizing preformed folic acid.

**4.Reduced drug accumulation**: by decreasing drug permeability and/or increasing active efflux (pumping out) of the drugs across the cell surface.