Beta-Lactamase Inhibitors

Beta-lactamase inhibitors are commonly combined with penicillin group antibiotics to overcome resistance in bacteria that secrete beta-lactamase to inactivate most penicillins. These make antibiotics more effective but have no antibiotic activity when used alone. Commonly used beta-lactamase inhibitors include clavulanic acid, sulbactam, and tazobactam.

PLAY PICMONIC

Considerations

Often Combined with Penicillin Antibiotics

Pencil-villain

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Drug Names

Clavulanic Acid

Cleaver Acidic-lemon

This beta-lactamase inhibitor is commonly used with amoxicillin (Augmentin) and ticarcillin (Timentin) to prevent their degradation by beta-lactamase. Clavulanic acid shares a similar beta-lactam ring structure and is called a suicide inhibitor because it covalently binds to the active site of beta-lactamase, thus inactivating it.

Sulbactam

Soldier-playing-backgammon

This beta-lactamase inhibitor is commonly combined with cefoperazone or ampicillin. It is administered via injection and binds beta-lactamase irreversibly. This hinders the enzyme's ability to degrade beta-lactam antibiotics.

Tazobactam

Tazo-backgammon

Tazobactam is a compound that inhibits the action of beta-lactamases, and it is typically combined with the extended spectrum antipseudomonal antibiotic piperacillin in the drug Tazocin (trade name Zosyn). This structure broadens the spectrum of piperacillin and makes it effective against organisms that express a beta-lactamase that would normally degrade piperacillin.