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A) NAME OF THE DRUG:-
Nitrofurantoin

B) ANTIBACTERIAL ACTIVITY:-

It has a narrow antimicrobial spectrum, frequent bacterial resistance and toxicity.

Sensitive bacteria reduce the drug to an active agent that inhibits various enzymes and damages DNA. Its activity is higher in acidic urine.

Nitrofurantoin is bacteriostatic for most susceptible micro-organisms at concentrations of 32ug/ml or less and is bactericidal at concentrations of 100ug/ml and more. The antibacterial activity is higher in an acidic urine.

It is active against many strains of *E.Coli* and enterococci.

However, most species of proteus and pseudomonas and many species of enterobacter and klebsiella are resistant.

C) MECHANISM OF ACTION:-

It is rapidly reduced in bacterial cells by flavoproteins (nitrofurantoin reductase) to multiple reactive intermediates that attack ribosomal proteins, DNA, respiration, pyruvate metabolism and other macromolecules within the bacterial cell, thereby inhibiting protein synthesis.

D) PHARMACOKINETICS:-

Nitrofurantoin is absorbed rapidly and completely from the GIT tract. Antibacterial concentrations are not achieved in plasma following ingestion of recommended doses because the drug is rapidly eliminated. Nitrofurantoin colors the urine brown. It is not used for pregnant women, individuals with impaired renal function, children younger than one month of age. It is not recommended for the treatment of pyelonephritis or prostatitis.

E) ADVERSE EFFECTS:-

- **Gastrointestinal disturbances:** these side effects include nausea, vomiting, and diarrhea.
- **Acute pneumonitis**
- **Neurological problems** such as headache, nystagmus, and polyneuropathies with demyelination may occur.