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**MATRIC NO: 17/ MHS01/028**

**DEPARTMENT: PHYSIOLOGY**

**COURSE TITLE: SYSTEM PHARMACOLOGY**

**COURSE CODE: PHA 306**

 **ASSIGNMENT**

1. Nitrofurantoin
2. Nitrofurantoin has a broad spectrum activity the main uropathogens, Escherichia coli (E coli), citrobacter spp, group B streptococci, enterococci, staphylococcus aureus, staphylococcus epidermis, klebsiella pneumoniae and enterobacter app and has also been shown to be active against extended spectrum beta- lactamase producing enterobacteriaceae and vancomycin resistant enterococci. However it lacks activity against members of the genera Proteus, Providencia, Morganella, Serratia, Acinetobacter and Pseudomonas.
3. Nitrofurantoin is an antibacterial agent specific for urinary tract infections and is bactericidal in urine at therapeutic doses. The mechanism of the antimicrobial action of nitrofurantoin is unusual. Nitrofurantoin is reduced by bacterial flavoproteins to reactive intermediates which alter bacterial ribosomal proteins and other macromolecules. As a result of such inactivations, the vital biochemical processes of protein synthesis, aerobic energy metabolism, DNA synthesis, RNA synthesis and cell wall synthesis are inhibited.
4. Nitrofurantoin is well absorbed from the gut. Its half-life in plasma is very short (<1 hour) and therapeutic plasma concentrations are not achieved. It colors the urine brown. It is excreted largely unchanged in the urine,

giving [urinary concentrations](https://www.sciencedirect.com/topics/medicine-and-dentistry/kidney-concentrating-capacity) high enough to treat [lower urinary tract infections](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/urinary-tract-infection), but the low tissue concentrations are inadequate for the treatment of [acute pyelonephritis](https://www.sciencedirect.com/topics/medicine-and-dentistry/acute-pyelonephritis). It is not used for pregnant women, individuals with impaired renal function, children younger than one month of age.

1. Allergic skin reactions including pruritus; exfoliative dermatitis and erythema. Clostridium difficile colitis, flatulence, abdominal pain, acute and chronic pulmonary reactions, anorexia, numbness, thrombocytopenia, megaloblastic anemia, agranulocytosis, leukopenia, granulocytopenia and eosinophilia.