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MATRIC NO: 17/MHS03/012

DEPARTMENT: ANATOMY

COURSE: SYSTEMIC PHARMACOLOGY (PHA 306)

a Nitrofurantoin is used in the treatment of urinary tract infection and it causes brown coloration of urine.

b Nitrofurantoin interferes with the production of protein, DNA & cell walls. Sensitive bacteria reduce the drug to an active agent that inhibits various enzymes and damages DNA. It is active against many strains of E. coli and enterococci. However, most species of enterobacter and Klebsiella are resistant. The antibacterial activity is higher in an acidic urine.

c Mechanism of action

It damages DNA since its reduced form is highly reactive. 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.

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