

# Metronidazole

- Metronidazole also has effects on some types of bacteria.

- consist of imedazole ring (5 membered ring) +  $\text{CH}_3$  +  $\text{N}=\text{O}$   
 $\text{O}$

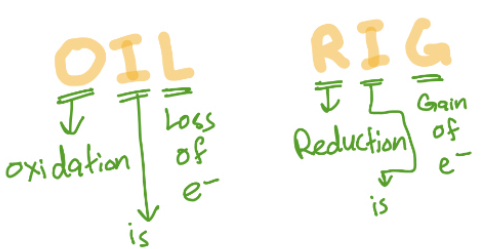
- It has a small molecular weight so it will has high absorption  $\rightarrow$  cross the placenta, breast feeding + BBB. Nitro groupe.

However, it's not teratogenic and it's almost safe  $\rightarrow$  بشكل عام المفروض انك تتجنب اغلب الأدوية في حالة الحمل + لكن في حالة كنته مفضل جدا بتقدر تكتيبه.  
 $\rightarrow$  Treat meningitis and CNS infections, but it may cause adverse effects due to the entire of the complete amount of this drug.

Oral absorption is 100% - Doesn't affected by Food.

- A portion of this drug can exit the body in urine as unchanged form, but it can't treat UTI ... it treat only the anaerobic infection. [UTI caused by aerobic]

- Metronidazole cause discoloration of the urine  $\rightarrow$  Dark Brown.  
 - Excretion in unchanged form.



only present in anaerobic bacteria + Metronidazole act on this enzyme +

- PFOR enzyme  $\rightarrow$  Pyruvate Ferredoxin Oxido Reductase } help in Production of ATP in anaerobic bacteria.

- Metronidazole gain  $e^-$  From PFOR (by mistake) and convert to free radical, this free radical will bond with bacteria's DNA and cause damages  $\rightarrow$  Death of the bacteria.  
 FREE RADICAL  $\rightarrow$  TOXIC COMPOUND - just in anaerobic -

- Is Metronidazole cause damage to our DNA or cells ?!  
 - NO, because we don't have PFOR enzyme.

- Metronidazole depend on PFOR enzyme, if there is NO PFOR, so this drug would be useless! → This is the cause why this drug is safe in pregnancy and breast feeding.

- Metronidazole without PFOR is in inactive form → It's a pro drug.  
↳ Activation occur by anaerobic bac. by PFOR.

### Spectrum ∞

- ① All anaerobic bacteria.
- ② E histolytica [ Protozoa cause intestinal amebiasis + has PFOR + anaerobic ]
- ③ Giardia → Protozoa

### Adverse effects ∞

- ① GIT → nausea - vomiting - metallic taste (6,000 #)
  - ② Neurological toxicity → headache - confusion
- } common !