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DEPARTMENT: NURSING
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QUESTION: Classify the antimalaria agents and state the mechanism of action of each class listed.

ANSWER:

1. **4-aminoquinolones**: Chloroquine , Amodiaquine

Mechanism of action: It is actively concentrated by sensitive intra-erythrocitic plasmodia by accumulating in the acidic food vesicles of the parasite and weekly basic nature.
It raises the vesicular PH and thereby interferes with degradation of haemoglobin by parasitic lysosomes.

2. **Quinoline methanol**: Mefloquine

Mechanism of action: it is same as chloroquine, it is also active against chloroquine sensitive as well as resistant P.vivax and falciparum.

3. **Cinchona alkaloid:** Quinine, Quinidine

Mechanism of action: it is same as chloroquine, it is a weak base. It gets concentrated in the acidic food vacuoles of sensitive plasmodia, inhibits the polymerization of haeme

to hemozoin, free haeme increases toxicity which damage parasite membrane and kills it.

4. **Biguanides**: Proguanil (chloroguanide)

Mechanism of action: it is cycled in the body to cycloguanil which inhibits plasmodial DHFRase in preference to mammalian enzyme.

5. **Diaminopyrimidines**: Pyrimethamine

Mechanism of action: it is an inhibitor of dihydrofolate reductase.

6. **8-aminoquinolones:** Primaquine , Tafenoquine

Mechanism of action: it as no well known mechanism of action but it is believed to generate free radicals that kill the parasite.

7. **Sulfonamide and sulfone:** Sulfadoxine , Sulfamethylpyrazine Dapson

Mechanism of action: they are antimetabolites, they compete with para amino benzoic acid (PABA) for incorporation with folic acid.

8. **Antibiotics**: Tetracycline, Doxycycline

Mechanism of action: these are protein synthesis inhibitors. They inhibit the initiation of translation in variety of ways by binding to the 30s ribosomal subunit, which is made up of 16S Rrna and 21 proteins. They inhibit the the binding of aminoacyl-Trna to the Mrna translation complex.

9. **Sesquiterpene lactones**: Artesunate , Artemether , Artether

Mechanism of action: it exerts action on ring forms to early schizonts in the erythrocytic schizogony.

10. **Amino alcohols**: Halofantrine , Lumefantrine

Mechanism of action: it as no well known mechanism of action but inhibits the formation of beta hematin by forming a complex with hemin and inhibits nucleic acid and protein synthesis.

11. **Naphthyridine**: Pyronaridine

Mechanism of action: it target hematin, as demonstrated by its ability to inhibit in vitro beta hematin formation, to form a complex with hematin, to enhance hematin induced red blood cell lysis and to inhibit glutathione-dependent degradation of hematin.

12. **Naphthoquinone**: Atovoquone

Mechanism of action: it selectively inhibits the malaria cytochrome complex n the parasitic electron transport chain, collapsing the mitochondrial membrane potential.