NAME: BOBOLA PRAISE.

MATRIC NO: 18/MHS02/200.

CLASSIFICATION OF ANTI MALARIA AGENTS.

1. Quinine
2. Chloroquine
3. Amodiaquine
4. Pyrimethamine
5. Proguanil
6. Sulfonamides
7. Mefloquine
8. Atovaquine
9. Primaquine
10. Arteminsinin and derivatives
11. Halofantrine
12. Clindamycin
13. Lumenfatrine
14. Doxycycline

QUININE

MECHANISM OF ACTION: Quinine is an alkaloid that acts as a blood schizonticidal and weak gametocide against Plasmodium vivax and Plasmodium malariae. As an alkaloid it is accumulated in the food vacuoles of Plasmodium species, especially Plasmodium falciparum. It acts by inhibiting the hemozoin biocrystallization, thus facilitating an aggregation of cytoxic

heme. It is especially useful in areas where there is known to be a high level of resistance to chloroquine.

CHLOROQUINE

MECHANISM OF ACTION

Chloroquine is a 4-aminoquinolone compound with a complicated and still unclear mechanism of action. It is believed to reach high concentrations in the vacuoles of the parasites, which, due to its alkaline nature, raises the internal pH. It controls the conversion of toxic heme to hemozoin by inhibiting the biocrystallization of hemozoin, thus poisoning the parasite through excess levels of toxicity. Other potential mechanisms through which it may act include interfering with the biosynthesis of parasitic nucleic acids and the formation of a choroquine-haem or chloroquine-DNA complex.

AMODAQUINE

MECHANISM OF ACTION: is a 4-aminoquinolone anti-malaria drug in similar structure and mechanism of action to chloroquine.

PYRIMETHAMINE

MECHANISM OF ACTION: Its acts by inhibiting dihyrofolate reductase in the parasite thus preventing the biosynthesis of purine and pyrimidine, thereby halting the processes of DNA replication, cell division and reproduction.

PROGUANIL

MECHANISM OF ACTION: It has many mechanism of action but it is primarily mediated through conversion to the active metabolite cycloguanil. This inhibits the malarial dihydrofolate reductase enzyme. It's most prominent effect is on the primary tissue stages of *P.falciparum, P.vivax and P.ovale*

SULFONAMIDES

MECHANISM OF ACTION: Sulfonamides and sulfamethoxypyridazine are specific inhibitors of the enzyme dihydropteroate synthase in the tetrahydrofolate pathway of malarial parasites. They are structural analogs of p-aminobenzoic acid (PABA) and compete with PABA to block its conversion to dihydrofolic acid.

MEFLOQIUNE

MECHANISM OF ACTION: It is a very potent blood schizonticide with a long half-life. It is thought to act by forming toxic heme complexes that damages parasitic food vacuoles.

PRIMAQUINE

MECHANISM OF ACTION: It is a highly active 8-aminoquinolone that is effective against P-falciparum gametocytes but also acts on merozoites in the blood stream and on hynozoites, the dormant hepatic forms of *P.vivax and P.ovale*. The mechanism of action is not fully understood but it is thought to block oxidative metabolism in Plasmodia.

ARTEMISININ AND DERIVATIVES

- Arthemeter: MECHANISM OF ACTION: It is aderivative of dihydroartemesinin. It is similar to artemesinin in mode of action but demonstrates a reduced ability as a hypnozoiticidal compound instead acting more significantly to decrease gametocyte carriage.
- Artesunate: is a hemisuccinate derivative of the active metabolite dihyroartemisinin. Its only effect is mediated through a reduction in the gametocyte transmission.
- Dihydroartemisinin: it is an active metabolite to which arteminisinin is reduced. It has a strong blood schizonticidal action and reduces gametocytes transmission.

HALOFANTRINE

MECHANISM OF ACTION: It is chemically related to Quinine and acts acting as a blood schizonticide effective against all Plasmodium parasites. Cytotoxic complexes are formed with ferritoporphyrin XI that cause plasmodial membrane damage.

DOXYCYCLINE

MECHANISM OF ACTION: It is a bacteriostatic agent that acts to inhibit the process of protein synthesis by binding to the 30S ribosomal subunit thus preventing the 50S and 30S units from bonding.

CLINDAMYCIN

MECHANISM OF ACTION: It is a slow action against blood schizonticides. It is only used in combination with quinine in the treatment of acute cases of resistant *P.falciparum* infections not as a prophylactic.