



## HYDROXY CHLOROQUINE:-BOON OR BANE ?

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**ABSTRACT** Hydroxychloroquine (HCQ) is a hydroxylated derivative of chloroquine that has both antimalarial & anti-inflammatory activities. It is used for the treatment of malaria & other autoimmune diseases like Systemic lupus erythematosus, Rheumatoid arthritis, Sarcoidosis etc. Presently it is approved by ICMR for the prophylaxis of Covid 19 infections among the health workers & also for the treatment of patients with Corona Virus Disease 2019 (Covid 19) infections. But US FDA warns against the side effects of inappropriately used HCQ.

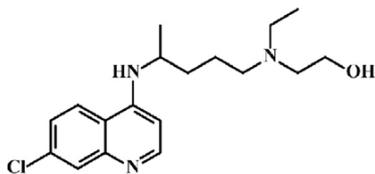
**KEYWORDS :** Hydroxychloroquine, Covid 19.

### INTRODUCTION

Hydroxychloroquine is widely known, easily available & affordable anti-malarial agent. It is equally effective for the treatment of malaria & it is preferred to Chloroquine for autoimmune diseases like Systemic lupus erythematosus, Rheumatoid arthritis, Discoid lupus, Sarcoidosis etc because even when given in high dose it has better safety profile than Chloroquine. Presently it has been approved by ICMR for the prophylaxis of the novel Corona virus disease (Covid 19) among the health workers & also for the treatment of Covid 19 infections. WHO has declared Covid 19 as a pandemic disease on 11th March 2020. But US FDA warns against the side effects of inappropriately used HCQ.

### Structure

Hydroxychloroquine is a 4-aminoquinoline. It is a hydroxylated derivative of chloroquine. Formula is C<sub>18</sub>H<sub>26</sub>ClN<sub>3</sub>O



Molecular weight is 335.9 gms/mol

The marketed formulation contains Hydroxychloroquine sulphate

Mechanism of action

The SARS-CoV2 binds to human cells via Angiotensin converting enzyme 2 (ACE2) receptor. Chloroquine affects the glycosylation process of ACE2 receptor, making the cells pretreated with HCQ refractory to Covid 19 infection. It hampers low pH dependent steps of viral replication.

### Pharmacokinetics:-

It is administered orally. Bioavailability is variable - 74% on an average

45% bound to plasma protein.

It is metabolized in the liver.

Elimination half-life 32-50 days

Mostly eliminated by the kidney (23-25%), less than 10% biliary excretion

### Role of HCQ in the treatment of Covid 19

The first ever human trial of Chloroquine against Covid 19 virus was started in China on more than 100 patients. They found that the drug is very effective in reducing the symptoms, duration, exacerbation of pneumonia, radiological improvement & lead to virus negative sero-conversion.

The French group of investigators studied the effectiveness of HCQ along with Azithromycin for the treatment of Covid 19. They included 36 patients in the study. It was an open label non-randomized control trial. They found significant reduction of viral load on 6th day of treatment.

ICMR has initially recommended HCQ for the prophylaxis of Covid 19 among the health workers who are involved in the care of suspected or confirmed cases of Covid 19 & also for the household contacts of confirmed cases. HCQ is also recommended for the treatment of mild to moderate Covid 19 infections, along with drugs like Azithromycin & Oseltamivir. Currently due to lack of Randomized Clinical Trial, guidelines for prophylaxis & treatment are lacking from Centers for Disease Control (CDC).

### ICMR Recommendations:-

I For prophylaxis:-

a) Health workers who are involved in the care of suspected or confirmed cases of Covid 19 :-

Day 1 Tab HCQ 400 mg twice a day, followed by 400 mg once a week for 7 weeks, with meals

b) Household contacts of confirmed cases:-

Day 1 Tab HCQ 400 mg twice a day, followed by 400 mg once a week for 3 weeks, with meals

### II For treatment:-

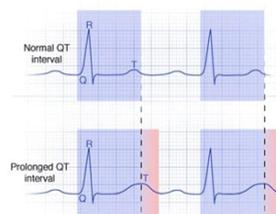
a) **Mild illness with comorbidities:-** Tab HCQ 400 mg twice a day on Day 1, followed by 400 mg once a day for 4 days

b) **Moderate illness:-** Tab HCQ 400 mg twice a day, followed by 400 mg once a day for 4 days. Along with HCQ, Azithromycin & Oseltamivir has to be taken

**Paediatric:** On day 1:- 6.5 mg/kg/dose 12th hourly, followed by 3.25 mg/kg/dose 12th hourly for 4 days. HCQ should be taken along with food. Renal or liver impairment no dosage adjustment is needed

### Adverse effects

Nausea, vomiting, rashes, graying of hair & hypoglycemia. An important side effect is QTc prolongation



Clinicians should obtain follow up ECG daily for the first 48 to 72 hours. If QTc is more than 500ms, HCQ should be stopped. It should not be used in cases of documented cardio myopathy or myocarditis.

Use with caution in presence of multi organ dysfunction.

Ophthalmic complications like moderate to severe reduction in visual acuity and subtle central visual field defects has been observed on long term usage. The risk of retinal toxicity is more marked over a cumulative dose of 1000g and mostly in patients above 5 years for any long term treatment.<sup>9</sup>

Bull's eye maculopathy in retina and vortex keratopathy are ocular side effects of Hydroxychloroquine.

### Precautions

Patients who are taking these drugs should be monitored with haematological parameters, serum electrolytes, blood glucose, renal & liver functions. As HCQ causes QTc prolongation routine ECG should be done before starting the treatment. Co administration of other drugs known to cause QTc prolongation should be avoided.

### CONCLUSION

Corona Virus Disease 2019 (Covid19) is declared as a pandemic by WHO on 11th March 2020. Presently no standardized treatment is available for Covid19, but Hydroxychloroquine along with Azithromycin & Antiviral drugs give a ray of hope for Covid 19 infected patients. If we use judiciously Hydroxychloroquine is a boon in expert hands.

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