



# REVIEW ARTICLE ON HYDROXYCHLOROQUINE A NEW RISING STAR

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## Abstract

Hydroxychloroquine is medically used to treat and prevent malaria. There are several other uses of hydroxychloroquine including rheumatoid arthritis, porphyria cutanea tarda, lupus. It has been studied for ability that it can prevent and treat corona virus disease 2019 ( COVID 19) but it has risk of dangerous side effects. It is a chemotherapeutic agent which act against erythrocytic forms of malaria parasite. Azithromycin when combined with Hydroxychloroquine has been shown to be significantly more effective in eliminating virus.

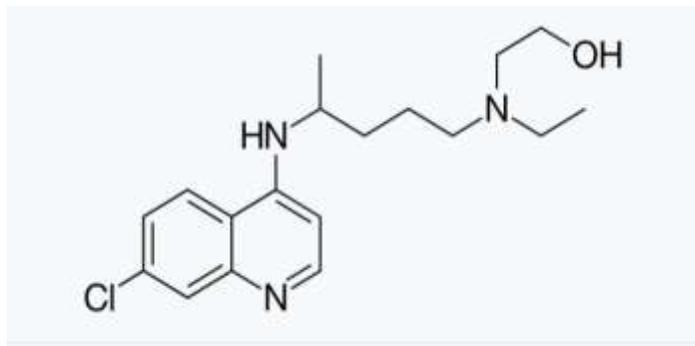
**KEY WORDS-** Azithromycin, Bisdeseethylchloroquine, COVID 19, Desethylhydroxychloroquine, Desethylchloroquine, Hydroxychloroquine,

**TRADE NAME-** PLAQUENIL

**OTHER NAME-** HYDROXYCHLOROQUINE SULFATE

It is practically white and white crystalline powder, freely soluble in water and insoluble in alcohol, chloroform, etc. The chemical name is -

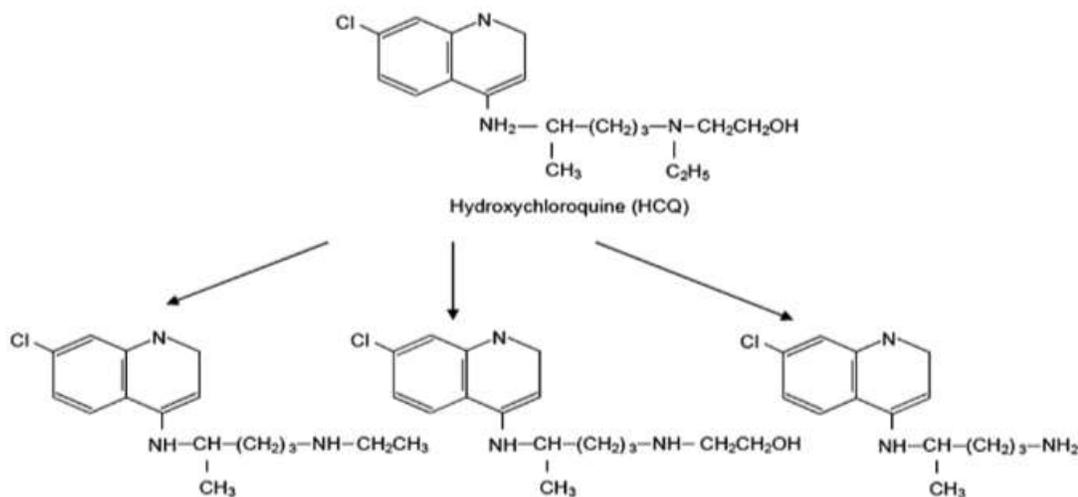
2 - [[4 - [(7-chloro-4-quinoly) amino] pentyl] ethylamino] ethanol. [1]



Hydroxychloroquine is a 4-aminoquinoline with immunosuppressive, anti-autophagic and antimalarial activities. Although the exact mechanism of action is unknown, hydroxychloroquine can inhibit immune function by stopping treatment and antigen presentation and producing cytokines. As a lysosomotropic agent, hydroxychloroquine increases intralysosomal pH, altering the breakdown of autophagic protein, hydroxychloroquine-induced accumulation of ineffective autophagosomes can cause cell death in autophagy-dependent tumor cells for their survival. In addition, this agent is very active against erythrocytic forms of *P. vivax* and malaria and the majority of *P. falciparum* strains, but not against gametocytes of *P. falciparum*. [1]

Hydroxychloroquine is only found in people who have used or taken this medicine. It is a chemotherapeutic agent that acts against the erythrocytic forms of malaria parasites. Although the exact mechanism of action is unknown, it may depend on the ability of hydroxychloroquine to bind and modify DNA. Hydroxychloroquine has also been shown to be absorbed in the acidic food cravings of the parasite in the erythrocyte. This increases the pH of acid vesicles, interfering with vesicular functions and possibly inhibiting the metabolism of phospholipids. When suppressed, hydroxychloroquine prevents plasma growth at the stage of red blood cells. In acute attacks of malaria, it interrupts the erythrocytic schizogony of the parasite. Its ability to focus on parasitized erythrocytes may explain its selective toxicity against the erythrocytic stages of a plasmodial infection. As an anti-rheumatic drug, hydroxychloroquine is believed to act as a mild immunosuppressant, inhibiting the production of rheumatoid factor and acute phase reagents. It also accumulates in white blood cells, which leads to the stability of lysosomal membranes and inhibits the activity of many enzymes, including collagenase and protease, causing cartilage to collapse. [1]

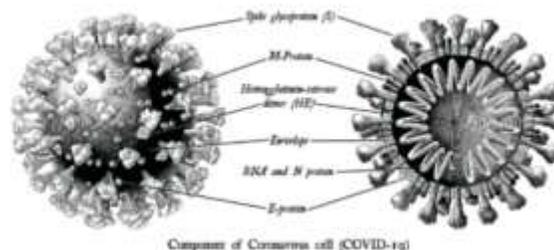
**METABOLITES:** A sequential achiral-chiral liquid chromatography system has been developed for the quantification in urine of the enantiomers of hydroxychloroquine (HCQ) and their 3 main metabolites, desetilhidroxicloroquina (DHCQ), desetilcloroquina (DCQ) and bisdesetilcloroquina (BDCQ). 2 HCQ and its metabolites were separated and quantified in the cyanogenic phase, and variable ratios were determined using the AGP phase. The validation of the trial and the application of this method to a preliminary study in a human volunteer are presented. In this subject, the initial urine from 0 to 4 h contained the 2 enantiomers of HCQ in a (+) - HCQ: (-) - HCQ ratio of 3: 2; within 2,064 hours of the study, this ratio returned to (+) - HCQ: (-) - HCQ of 3: 7. [2] [3]

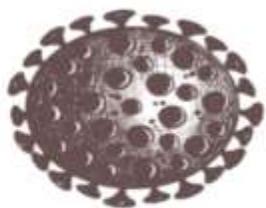


**USES:** Hydroxychloroquine is used to treat systemic lupus erythematosus, rheumatic disorders such as rheumatoid arthritis and Q fever, and certain types of malaria, and is also used in late skin porphyria. [4]

It is considered to be the first-line treatment for systemic lupus erythematosus. [5] Certain types of malaria, resistant strains and complicated cases require different or additional drugs. [4] It is widely used to treat primary Sjögren's syndrome, but has not been shown to be effective. [6] Hydroxychloroquine is widely used in the treatment of post-Lyme arthritis. It can have both anti-spirochete and anti-inflammatory activity, similar to the treatment of rheumatoid arthritis. [7]

**CORONA VIRUS:-**





coronavirus

## HYDROXYCHLOROQUIN IN COVID-19

It is also being studied as a treatment for coronavirus disease 2019 (COVID-19) [8] [9]. Hydroxychloroquine has been shown to be effective in COVID-19 and has been reported to be effective in Chinese patients infected with this virus. We are evaluating the role of hydroxychloroquine in respiratory viral loads. Patients and methods Patients were enrolled in a single-arm protocol to receive 600 mg of hydroxychloroquine per day and their viral load in nasal swabs was tested daily. According to its clinical presentation, azithromycin was added to the treatment. Patients who did not receive treatment from another center and those who rejected the protocol were included as negative controls. The presence and absence of virus on day 6 was considered the end point. Results Twenty cases were treated in this study and showed a significant reduction in D-6 viral transport compared to controls, and a much shorter transport time than the average reported of patients not treated in the literature. Azithromycin added to hydroxychloroquine has been shown to be significantly more effective in eliminating viruses. [10] [11]

**CONCLUSION:** Hydroxychloroquine is significantly associated with the reduction / disappearance of viral load in patients with COVID-19 and its effect is reinforced by azithromycin. [10] [11]

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