

Scientists propose repurposing anti-malarial drug Mefloquine to fight COVID-19

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Mefloquine: A promising drug in the battle against COVID-19



Japanese scientists are scanning the possibility of using an anti-malarial drug called [mefloquine](#). In a breakthrough study, a team of scientists from Tokyo University of Science (along with scientists from the National Institute of Infectious Diseases, Kyushu University, The University of Tokyo, Kyoto University, Japanese Foundation for Cancer Research, and Science Groove Inc.) have identified an anti-malarial drug, mefloquine (which is incidentally a derivative of hydrochloroquine), that is effective against SARS-CoV-2. [Published: Frontiers in Microbiology.](#)

Lead scientist Dr. Watashi says, “To identify drugs with higher antiviral potency than existing antivirals, we first screened approved anti-parasitic/anti-protozoal drugs. We found that mefloquine had the highest anti-SARS-CoV-2 activity among other tested compounds like quinoline derivatives (hydrochloroquine) laboratory human lung cells.”

Explaining the mefloquine’s mechanism of action, Dr. Watashi said, “In our cell assays, mefloquine readily reduced the viral RNA levels when applied at the viral entry phase but showed no activity during virus-cell attachment. This shows that mefloquine is effective on SARS-COV-2 entry into cells after attachment on cell surface.”

Thus, to bolster mefloquine’s anti-viral activity, the scientists looked into the possibility of combining it with a drug that inhibits the replication step of SARS-CoV-2: Nelfinavir. Interestingly, they observed that the two drugs acted in “synergy” and the drug combination showed greater anti-viral activity than either showed alone, without being toxic to the cells in the cell lines themselves.

Mathematical modelling of the effectiveness of mefloquine depicted predict that mefloquine could reduce the overall viral load in affected patients to under 7% and shorten the ‘time-till-virus-elimination’ by 6.1 days, and thus is potential in treating real-world cases. Study is yet to succeed the clinical trials, but the world can hope that mefloquine becomes a drug used to effectively treat patients with COVID-19.

Some approved drugs for COVID-19, like hydroxychloroquine, lopinavir, and interferon, have already been put to clinical use against SARS-CoV-2 without well establishing their clinical efficacies, due to the severity of the pandemic. Subsequent

randomized trials have not been able to yield a consensus on the efficacy of these drugs. Only remdesivir has been approved for clinical use against severe COVID-19, although its efficacy is still being debated.