



Chloroquine as Reposition Drugs for Novel Coronavirus SARS-COV-2 Emergence

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A movement to reposition tablets has been initiated in current years [1]. In this strategy, it is vital to use tablets which have been tested to be harmless and whose pharmacokinetics and most advantageous dosage are well known. In the current episode of novel coronavirus (SARS-CoV-2) emergence [2], we find a wonderful enough of possible repositioning of tablets, especially chloroquine. We had 20 years ago proposed to systematically check chloroquine in viral infections as it have been proven to be powerful in vitro against a broad variety of viruses [3,4]. This drug has more than one activity, one among that's to alkalise the phagolysosome, which hampers the low-pH-based steps of viral replication, along with fusion and uncoating [4]. Other mechanisms of antiviral activity are poorly explained [5]. At the time of the extreme acute breathing syndrome (SARS)-associated coronavirus epidemic [6] in 2003, several molecules have been tested to assess their effectiveness towards this virus. Among these, teicoplanin [7], an antistaphylococcal agent, had established efficacy in vitro and this changed into additionally the case for chloroquine, at a 50 effective concentration (EC 50) of approximately eight μM and when introduced to the cell tradition either earlier than or after exposure to the virus [5,8-10]. These findings ended up being forgotten because of the disappearance of SARS for reasons that are neither clear nor explained [11]. The novel coronavirus presently isolated in China has been, with mind-blowing speed, evaluated concerning its sensitivity to already used capsules [12]. Thus, the brand-new antiviral drug remdesivir [13] in addition to chloroquine, at an EC 50 of 1.1 μM , have been discovered to be powerful in preventing replication of this virus [12]. Chloroquine is perhaps one of the most prescription drugs within the world [14,15]. As a count number of facts, all Europeans touring malaria-endemic geographic areas for many years received chloroquine prophylaxis and persevered

it for two months after their return. In addition, local citizens took chloroquine continuously, and treatment of malaria has long been based in this drug. In addition, hydroxychloroquine has been used for decades at much better doses (up to 600 mg/day) to deal with autoimmune diseases [16]. It is difficult to find a product that presently has a better-established protection profile than chloroquine. Furthermore, its price is negligible. Hence, its viable use each in prophylaxis in people exposed to the unconventional coronavirus and as a curative remedy will probably be right away evaluated by means of our Chinese colleagues. If clinical records verify the biological results, the unconventional coronavirus-associated sickness will have end up one of the simplest and most inexpensive to deal with and prevent among infectious breathing disease.

Bibliography

1. Mullard A. "Drug repurposing programmes get lift off". *Nature Reviews Drug Discovery* 11.7 (2012): 505-506.
2. Zhou P., et al. "A pneumonia out- break associated with a new coronavirus of probable bat origin". *Nature* 579.7798 (2020): 270-273.
3. Savarino A., et al. "New insights into the antiviral effects of chloroquine". *Lancet Infectious Diseases* 6.2 (2006): 67-69.
4. Rolain JM., et al. "Recycling of chloroquine and its hydroxyl analogue to face bacterial, fungal and viral infections in the 21st century". *International Journal of Antimicrobial Agents* 30.4 (2007): 297-308.
5. Vincent MJ., et al. "Chloroquine is a potent inhibitor of SARS coronavirus infection and spread". *Virology Journal* 2 (2005): 69.

6. Ksiazek TG., *et al.* "A novel coronavirus associated with severe acute respiratory syndrome". *New England Journal of Medicine* 348.20 (2003): 1953-1966.
7. Balzarini J., *et al.* "Inhibition of feline (FIPV) and human (SARS) coronavirus by semisynthetic derivatives of glycopeptide antibiotics". *Antiviral Research* 72.1 (2006): 20-33.
8. Keyaerts E., *et al.* "In vitro inhibition of severe acute respiratory syndrome coronavirus by chloroquine". *Biochemical and Biophysical Research Communications* 323 (2004): 264-268.
9. Barnard DL., *et al.* "Evaluation of immunomodulators, interferons and known *in vitro* SARS-coV inhibitors for inhibition of SARS-coV replication in BALB/c mice". *Antiviral Chemistry and Chemotherapy* 17 (2006): 275-284.
10. de Wilde AH., *et al.* "Screening of an FDA-approved compound library identifies four small-molecule inhibitors of Middle East respiratory syndrome coronavirus replication in cell culture". *Antimicrobial Agents and Chemotherapy* 58.8 (2014): 4875-4884.
11. Yu IT., *et al.* "Severe acute respiratory syndrome beyond Amoy Gardens: completing the incomplete legacy". *Clinical Infectious Diseases* 58.5 (2014): 683-686.
12. Wang M., *et al.* "Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) *in vitro*". *Cell Research* 30.3 (2020): 269-271.
13. Agostini ML., *et al.* "Coronavirus susceptibility to the antiviral remdesivir (GS-5734) is mediated by the viral polymerase and the proofreading exoribonuclease". *mBio* 9.2 (2018): e00221-18.
14. White NJ., *et al.* "Malaria". *Lancet* 383.9918 (2014): 723-735.
15. Al-Bari MA. "Chloroquine analogues in drug discovery: new directions of uses, mechanisms of actions and toxic manifestations from malaria to multifarious diseases". *Journal of Antimicrobial Chemotherapy* 70 (2015): 1608-1621.
16. Lee SJ., *et al.* "The role of antimalarial agents in the treatment of SLE and lupus nephritis". *Nature Reviews Nephrology* 7.12 (2011): 718-729.

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