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Novel Coronavirus (SARS-CoV-2) resistance in African populations: A cause worth exploring

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To the Editor,

At this time, the entire world is fighting to contain the Novel Coronavirus (SARS-CoV-2) pandemic. Within a very few months, the Novel Coronavirus disease 2019 (COVID-19) caused by this virus has spread to almost all parts of the globe covering 213 countries, with 4,894,278 confirmed cases and 320,189 deaths till 19th May 2020 (1). The entire human race seems to be under threat, as the number of cases and mortality is increasing exponentially due to this pandemic. There is no specific cure for COVID-19 till date, and researchers are trying their level best to develop treatment protocols and vaccine against this novel virus.

The Novel Coronavirus has shown a devastating effect in some of the developed nations of the world such as the USA and most of the European countries, that are failing to contain the spread of this epidemic. The deadly claws of the virus have however, spared the African countries when compared to its effect on other continents particularly the North America, Europe and Asia. Barring a few African countries such as South Africa, Egypt, Morocco, and Algeria, in most of the other African countries, the contracting and fatality rates of this virus are much lower than those reported in other countries of the world (1). This relative protection of African nations may be attributed to certain immunity of their inhabitants against the Novel Coronavirus.

The lower incidence of Coronavirus infection and deaths in African countries may be associated with the endemicity and prevalence of falciparum malaria in these areas. Chloroquine and hydroxychloroquine have been used for the prevention and treatment of malaria since centuries (2). During the ongoing pandemic, chloroquine and hydroxychloroquine has been suggested as useful drugs in management of COVID-19 (3), and its role in COVID-19 prophylaxis too is being explored. US Food and Drug Administration (US-FDA), has even recommended its use in the treatment of COVID-19. Recently published literature confirms hydroxychloroquine to have an in-vitro activity against COVID-19 (4-6). Thus, an association between malaria endemicity, lower incidence of COVID-19, and chloroquine and hydroxychloroquine as the common line of management seems worth exploring.

In 1954, a British geneticist, Anthony Allison established that the carriers of sickle cell anemia (SCA) are protected against *Plasmodium falciparum* malaria (7). The heterozygotes for the sickle cell gene known as sickle cell trait (HbAS) protects people from acquiring this severe form of malaria. Sickle cell disease/ anemia is inherited as a pair of sickle mutation (homozygous condition, HbSS); one each from the mother and the father. Such people who are homozygous for the sickle gene develop SCA, and are more susceptible to the effects of falciparum malaria (8). It has been confirmed that the Sickle cell trait offers evolutionary and genetic selection in malaria endemic areas particularly in many of the African countries (9). Plasmodium malaria has affected the human population for the last 100,000 years (10), and it is argued that in the course of evolution, the natural seems in humans has evolved traits in

the form of HbS and HbC to protect against this form of malaria (11). HbS and HbC are found to provide immunity to the African population against infectious disease such as *Plasmodium falciparum* malaria. Likewise, the possibility of these abnormal or other hemoglobins offering certain protection against the Novel Coronavirus infection in these populations needs to be explored.

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