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Use of African Ethnomedicine as way to treat COVID-19: Implications for Humans - African Primates welfare

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Since the emergence of COVID-19 at the end of 2019, the virus has spread around the world, becoming a pandemic and claiming hundreds of thousands of lives and making millions of people ill worldwide. Despite inadequate health facilities and overcrowded urban areas, Africa remains the least affected continent by COVID-19. Here the death rate remains lower than in richer countries, however the risks hanging over the continent are still immense. Beyond this observation, the difficulties of implementing widespread diagnosis of the disease in Africa may mean that the situation is still poorly under-assessed, due to the inexperience of healthcare professionals. Added to this, is the lack of available test kits in certain health institutions. Therefore, many symptomatic cases related to fevers associated with coughing are sometimes treated as positive cases. In view of this difficult situation prevails on the African continent, several other hypotheses have emerged to explain this, including the youth of the population, climate, and collective acquired immunity following repeated infections of malaria (because of some evidence of hydroxychloroquine to relieve COVID-19), tuberculosis, influenza and other bacterial or viral diseases, for which vaccines are still registered in the national public health program on the continent [1-2]. Following the controversy of treatments, and the resistance of available drugs on the market against this virus, there is an urgent need to find novel active molecules for treatment [1]. Thereby, African lifestyles and our knowledge of use of traditional medicine may be crucial in fighting COVID-19.

Also faced with this potential threat, many great ape sites in Africa have temporarily been closed to tourists and stopped research activities, in order to limit the transmission risk between humans and apes because of their close phylogenetic relationship, physiological parallels, and similar immune systems. There are two ways that primates or animals can fight disease in environment, such as — i) the acquired immunity, resulting of frequent reinfection [3] — ii) the self-medication by which they are able to control or treat disease via the ingestion of medicinal plants, many of which are also found in African traditional medicine [4]. A variety of zoonotic diseases have been responsible for declines in primate populations across Africa, such as anthrax and Ebola [5-6]. The risk of disease transmission among most primates is high because of the nature of their social organization, by which social interactions (playing, grooming, fighting, and sexual relationship) are frequent among the cohesive social unit and in some species between members of interacting with neighboring groups. Reports of asymptomatic monkeypox viral outbreaks (usually characterized by skin rashes, respiratory symptoms like coughing) was reported in a population of wild habituated chimpanzees in 2017 and 2018 in the Tai National Park, Ivory Coast. Some members manifested the disease, and one infant died [7]. In 2012, Radonić et al. [8] established the first lethal case of monkeypox in wild-living mangabey (*Cercocebus atys*) in the same national park. In 2016, Patrono et al. [9] described the first case of human coronavirus OC43 infection in these chimpanzees, this time without lethal consequences. Why are animals asymptomatic or recover in some instance, but die in others? Could this be due to the ingestion of plants with medicinal properties? Great apes are known to be susceptible to respiratory illnesses transmitted by human, and they can be lethal [10-11]. Even if self-medication is practiced by individuals of such groups, we can be complacent and minimize the threat of the coronavirus (SARS-CoV-2) to wild African primate populations. To date, COVID-19 has been demonstrated to be lethal in captive rhesus macaque (*Macaca mulata*) and it is reasonable to expect other primate species to also be susceptible to infection [12].

Given the urgent need to find effective treatments for COVID-19, one interesting avenue of research could be to look at the literature from ethnomedicine and the field of zoopharmacognosy for plants with demonstrated or suspected anti-viral properties. A search should focus on the medicinal plants used in curative and/or preventive treatments by local people against malarial, viral and respiratory infections. Due to the socioeconomic status of African people living in rural areas and in large cities, both are fond of traditional medicine because of its low cost. Many of these traditionally used medicinal plants are also found in the diet of wild primates as medicine or as medicinal foods [13]. This suggests that by observing primate feeding behaviours, scientists can discover useful bioactive molecules and less cytotoxic to formulate influenza treatments which might control the spread of disease. At this time, the rich countries are carrying out clinical trials to test the effectiveness of the remedies (vaccines, genetic therapies, inorganic drugs) developed in the laboratory. We recommend that African people should move towards an endogenous solution that is up to their means for a response against COVID-19, using plants from the environment to heal, whose evidence from crude extracts and/or derived natural products have also been scientifically approved against certain diseases, or even used as potential agents to inhibit SARS-CoV-2 replication itself [14-16].

Conflicts of Interest

No, the authors have no potential conflicts of interest to disclose. No funding was received to carry out this work that could affect our point of view.
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