WHY PROTECTING THE GREAT APES IS CRUCIAL FOR PROTECTING THE HEALTH OF HUMANS

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The region of Congo and Uganda is a hub for the great apes including the chimpanzees. Orphaned chimpanzees that are raised by humans and then later released to their natural environment can autonomously evolve independently, without any external help including for food (Krief, 2019). This is a mystery to wonder how this happens. The chimpanzees start by testing a whole series of plants in small quantities little by little, then later select some that constitute the classic diet of wild chimpanzees in the forests (Huffman, 2002, 2018; Huffman *et al.,* 1996; Krief *et al.,* 2006). They learn this themselves without any help from their mothers. It has been observed that some of the plants consumed by the apes are part of the indigenous Congolese and Ugandan pharmacopoeia (Krief, 2019; Masi *et al.,* 2012).

Some of the plants the chimpanzees occasionally eat are rich in secondary metabolites like tannins and alkaloids (Huffman, 2018; Krief *et al.,* 2006; Masi *et al.,* 2012). Plants use secondary metabolites to defend themselves against predators such as herbivores. They are characterized by a bitter and astringent taste, hence forcing the consumers to only eat small quantities, thus, allowing the plant to survive. These molecules are also widely used in medicines for their therapeutic virtues, for example, acetylsalicylic acid which is the basis of aspirin and is extracted from the bark of the willow (Huffman, 2002). It is also observed that chimpanzees consume plants that are effective against diarrhoea and the local healers in Congo and Uganda use them for the same reasons (Huffman, 2002, 2018; Masi et al., 2012).

Chimpanzees benefit from plants that have medicinal properties. It has been observed that, in the morning, on an empty stomach, the chimpanzees roll up roughened leaves in their mouths before swallowing them; consequently, these little balls of the leaves strips allow them to tear out the parasites clinging to their digestive tracts; later being transported out in the intestinal transit (Huffman *et al.,* 1996; Krief et al., 2006). These leaves are not chewed and so this mechanical practice is not intended for the provision of calories or nutrients, but to expel the parasites out of their body. A Japanese chemist together with researcher Michael Huffman (Institute of Primatology at Kyoto University) have shown that the bitter stems of the herb *Vernonia amygdalina* have anti-parasitic properties, and the chimpanzees consume them

regularly (Huffman & Kalunde, 1993). Ugandan local healers use *Vernonia amygdalina* to cure malaria, pelvic pain, sore throat, fever and intestinal parasitosis (Katuura *et al.,* 2007; Tabuti *et al.,* 2003).

Since the opening of the Kibale National Park in Western Uganda (1993), it was only reserved for tourists and international scientists (Krief *et al.,* 2006). The local healers and the ethnobotanists were not authorized to herbalise inside the park until Sabrina Krief and her team (2019) during her research there requested their involvement. This exclusion is a disadvantage and could result in the loss of local knowledge on the medicinal use of plants. The team identified 300 different plant parts that the chimpanzees consume not knowing whether for food or medicine. With time, they crossed-checked the uses of the local pharmacopoeia and through the laboratory analysis; it was observed that certain plants were used in the same way and for the same reasons by the local population and the chimpanzees. For example, both the humans and the apes peel and chew the *Albizia grandibracteata* plant for deworming (Krief *et al.,* 2005; Masi *et al.,* 2012). The same plant is identified to contain molecules that have anticancer properties on the lung cells and throat. The same goes for the *Markhamia platyclayx,* which treats respiratory disorders. About 20 plant species having antimalarial properties have been identified, and chimpanzees affected by the *Plasmodium* alternate these plant species for their consumption. This is a very clever move as the alternation prevents the parasite from developing resistance to a specific molecule.

This amazing rich knowledge on self-medication by animals later emulated by humans is not only observed in apes but also elephants. Jean-Marc Dubost and colleagues (2019) interviewed the mahouts of Laos on the elephant's diet and the health problems. They found that the proportion of the medicinal plant species utilized by the mahouts to treat pachyderms came from observing the elephant's self-medication practices.

The communities living near the Kibale Park identify the chimpanzees as their totem or charming icon and consider them to embody their ancestors. Today, chimpanzees hold more knowledge on the medicinal properties of plant species than humans. Therefore, there is a need to elevate the cultural and natural heritage that represent the great apes to the rank of world heritage (Sabrina Krief suggestion to UNESCO) (Krief, 2019). The great apes are the "umbrella species", and protecting them would mean protecting the whole ecosystem in which they dwell and the health of humans. The recognition is also a great chance for humans to question their position on the planet. We all need to converge our thoughts, be the elder brothers of humanity and the guardians of mother Earth.

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