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NON INVASIVE MONITORING OF RESPIRATORY VIRUSES IN WILD CHIMPANZEES

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Respiratory disease is the most important cause of morbidity and mortality among wild great apes habituated to human presence for research or tourism and thus presenting major conservation concerns. In order to examine the occurrence and prevalence of respiratory diseases among wild living great apes there is a need for non-invasive diagnostic methods. Therefore, we analyzed fecal samples from habituated chimpanzees from Tai National Park, Côte d'Ivoire. Samples had been collected during four distinct outbreaks; two with known (March 2004 and February 2006) and two with unknown etiology (October 2004 and August 2005). Fecal samples were screened by PCR for the presence of human Metapneumovirus (HMPV) and human Respiratory Syncytial Virus (HRSV), two common paramyxoviruses previously found in the lung tissue of chimpanzees deceased due to respiratory disease. In the March 2004 outbreak, 72% of the tested individuals were positive for HMPV and during the 2006 epidemic, 25% tested HRSV-positive using the non-invasive method. In the unconfirmed outbreaks, where no causative pathogen was known, fecal samples tested positive for either HRSV or HMPV. Virus sequences from three outbreaks were generated and compared with sequences previously found in lung tissue. We found identical virus-sequences in both tissue and fecal samples. These results demonstrate that the detection and phylogenetic characterization of HRSV and HMPV out of fecal samples during outbreak times is possible. Thus the collection and analysis of fecal samples provides a useful diagnostic tool which enables on site non-invasive disease investigation in wild great apes.

Keywords: Respiratory disease; Non-invasive; Monitoring; Great apes