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A novel concept for minimally invasive blood sampling to detect active viral infection: an example of bat viruses

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Bats harbour enormous number of pathogens with zoonotic potential and there is an urgent need to discover novel viruses and collect further information about already known pathogens1. All bat species in Europe are strictly protected under the Flora, Fauna, Habitat Guidelines of the European Union (92/43/EEC) and the Agreement on the Conservation of Populations of European Bats (www.eurobats.org). It is important that the bat handling procedures should be carried out by a trained chiropterologist with appropriate experience. The guidelines for the bat examinations and sampling are available at the publication of Sikes et al 2. We developed a sampling method which is minimally invasive, even for smaller bat species (bodyweight: 5-15 g). We tested this method within the framework of Lloviu cuevavirus (LLOV) surveillance program. LLOV is the only filovirus endemic in Europe and the only known host for this virus is the Miniopterus schreirbersii bat which is widespread throughout the southern part of the European continent3, 4. There is a huge lack of understanding in the circulation of this virus and the potential of zoonotic transmission5,6, hence there is an intense need to develop standardised protocols for the sampling and detection of LLOV to deepen our knowledge about the spatio-temporal distribution of this virus. In the act of the surveillance, we collected ~550 blood samples with our method from mainly Miniopterus schreirbersii bats and from 5 other co-roosting species. As result none of the sampled animal suffered an injury, and we were able to recapture the animals after the procedure. Our message is that novel protocols are urgently needed for bat sampling, which highly emphasize conservational aspects and permit viral discovery and monitoring with minimal effect and disturbance.

Recent Publications

1. Misra, V. (2020) 'Bats and viruses', The Lancet Infectious Diseases, 20(12), p. 1380. doi: https://doi.org/10.1016/S1473-3099(20)30743-X

2. Sikes, R. S. (2016) '2016 Guidelines of the American Society of Mammalogists for the use of wild mammals in research and education', Journal of Mammalogy. doi: 10.1093/jmammal/gyw078

3. Negredo, A. et al. (2011) 'Discovery of an ebolavirus-like filovirus in europe.', PLoS pathogens, 7(10), p. e1002304. doi: 10.1371/journal.ppat.1002304

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