

Article Information

Received date : 15 February, 2023

Published date: 15 March, 2023

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DOI: 10.54026/ARS/1002

Keywords

Animal viruses; Human Medicine;
Veterinary Medicine; pathogens; Health

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Are There Any Differences Between the Study of Animal Viruses and Other Species?

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Abstract

One Health: an updated term. Perhaps it means that there should not be major differences between the methodologies that involve the study of pathogens typical of humans and other animals. The techniques are similar, the analysis carried out does not differ and the conclusions are direct.

Unlike Human Medicine, Veterinary Medicine is a multispecies discipline that must also provide a solution to the patient. The study of a viral cycle goes back to the study of the "metabolism" of bacteriophages and today several pathways are known through a virus affecting the permissive cell.

Legend has it that when André Lwoff was asked for a definition of a virus, he said: viruses are viruses. Let's see why...

Introduction

The methodologies used in Human Virology laboratories do not differ from those used in Animal Virology laboratories. What does differ is the associated financing, or rather the difference is in the number of research projects associated with the study of human pathologies with respect to the study of pathologies that affect other animal species, which is not trivial. Having overcome the above, the study of viruses assumes the existence of permissive cells for the study of viruses and the sentence: *viruses replicate exclusively inside living cells*, it takes real effect.

However, some methodologies such as the one devised by Kary Mullis [1] and others that involve knowledge of viral genomes (RNA or DNA) must be known by students.

Similarly, the existence of the Genbank® [2] has allowed the design of primers for the detection of pathogens of veterinary interest by means of Polymerase Chain Reaction (PCR). The identity of the amplified fragment has also been verified using some freely available online programs.

Material and methods

There are no major differences. Currently, the molecular methodologies used begin by incorporating the technique devised by Kary Mullis [2] together with 2% agarose gel electrophoresis, nucleic acid sequencing and the determination of nucleotide identity using CLUSTAL Omega [3] and BLAST [4]. The samples used -human or animal- for the detection of viral agents include fragments of organs or fluids from which it is possible to extract nucleic acids, both RNA and DNA. In the case of RNA we can mention the canine distemper virus to SARS-CoV-2 and in the case of DNA to the canine herpes virus or the monkeypox virus. Sequencing together with programs such as Clustal Omega, which allows aligning the delivered sequences, and BLAST, which later allows establishing the identity of the amplified fragment.

Discussion and conclusion

All these methodologies have allowed us to start the molecular study of pathogens of veterinary interest, taking the aforementioned ones as models [5-13]. Obviously, all these attempts allowed us to have at least 35 new veterinarians for our country, which has allowed them to develop in different areas of Veterinary Medicine.

Acknowledgments

We thank the students of FAVET for making their dreams come true with us and Dr. Aron Mosnaim, from the Wolf Foundation, Illinois, USA (since 2020).

Conflicts of interest: None

Funding : None

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