Viral diseases of amphibians and reptiles

Hello! You know that viruses can affect a great diversity of animals. Do you have an idea of how many viruses can affect amphibians? And reptiles? In this video we will become familiar with them. We will also see some features and consequences of the most relevant viral infections in these animals.

Don't forget that when we talk about "amphibians and reptiles" we are referring to a large number of animals whose characteristics, habitats and forms of life and development are very varied. Therefore, we must think that, since these animals are very diverse, so are the viruses that infect them.

As you see, they belong to families of all kinds, with varied morphology, composition and cycles of replication in the target cells. Among them we would like to highlight the family *Iridoviridae*, and in particular the genus *Ranavirus*, which causes one of the two diseases of amphibians in the List of Notifiable Diseases of the World Organization for Animal Health (OIE).

Viral processes in amphibians and reptiles have different courses and consequences, depending on the animals in question, its habitat and living conditions, and of course, the virus that infects it. Likewise, they can prompt the establishment of secondary infections by other pathogens, and may be an underlying cause of tumour processes.

Ah! Good news: the risk of transmission of these viral diseases to animals or to humans is negligible, due to differences in body temperature between amphibians or reptiles and that of mammals.

Let's know more about some features of two viral infections relevant in amphibians and reptiles.

We have already mentioned that Ranaviruses belong to the family *Iridoviridae*. They are, therefore, enveloped viruses whose genome is constituted by double-stranded DNA. These viruses are able to infect all amphibians, at any stage of their life cycle, although it seems that the process is more severe in animals in the larval stage. Also reptiles, and even fish, are susceptible to Ranaviruses.

The transmission of viruses is horizontal, through water or soil, by contact with infected animals, or by predation.

The disease is usually characterized by a hyperacute systemic haemorrhagic process, which causes high and sudden mortality in infected populations. In many cases no external clinical signs are observed, but the animals die from multiorganic failure after a few days after contracting the infection.

Ranavirus infection is one of the causes of the decline of populations of certain species of amphibians, such as the common midwife toad and the alpine newt.

Another relevant viral process is the infection by viruses of the family *Herpesviridae*, which are also enveloped viruses with double stranded DNA. Herpesvirus infections have been described in lizards, snakes, crocodiles and chelonians. Let's see some aspects of the infections caused by these viruses in the turtles, both marine and terrestrial.

The fibropapillomatosis of the chelonids, associated with herpesvirus infection, has been described in a large number of different species of sea turtles worldwide. Infected animals develop skin tumours, located mainly in eyes, neck, front, fins, tail and shell. Tumours are also observed in most internal organs.

Herpesvirosis in terrestrial turtles is especially problematic in the Greek tortoise and in the Mediterranean turtle. The infection is associated with high mortality and morbidity. The main

clinical signs are rhinitis and necrotic stomatitis, and are linked to periods of immunosuppression, such as post-hibernation, sudden changes in temperature, malnutrition, etc. Animals that survive the infection remain as asymptomatic carriers during all their lives, which favours the transmission of the viruses.

Remember how important it is to maintain wild species in their habitats. By knowing the diseases that can affect them we can improve their conservation. Don't you think so?