



**IMMUNO VALLEY**  
Connecting Human and Animal Health

## **ASIA: Animal-Specific Immunomodulatory Antimicrobials**

### **Newest infection inhibitors for poultry come from million year-old immune systems**

In the search for a new generation of infection inhibitors for livestock and companion animals, scientists not only examine the causes of the diseases, but also how it is that humans and animals in an environment with so many infectious microorganisms can stay healthy in the first place. The foundation for this is the natural immune system, which offered plants and animals protection long before the first vertebrates developed antibodies around 500 million years ago. The hypothesis is that approximately 90% of human and animal resistance to diseases is silently provided by this ancient system.

The ASIA research project is examining the 'ancient' molecules that have maintained their infection-inhibiting function over the ages. These 'Host Defence Peptides' (HDPs) are tiny peptides, chains of 15 to 50 amino acids, which can destroy harmful microorganisms while reinforcing the specific immune system. HDPs offer protection against a variety of bacteria, moulds, protozoa and even some viruses. They are active in a broad spectrum: in contrast to conventional antibiotics, HDPs can neutralise bacteria in a number of ways, varying from cell wall penetration to disrupting metabolism. As HDPs stimulate the immune system while killing pathogens in a variety of ways, bacteria have not been able to develop a resistance to them over the course of their existence.

The goal of the ASIA research project is to gain insight into the operation of peptides in poultry and pigs, in order to utilise them in the prevention or treatment of infectious diseases. To do so, the researchers examine which characteristics are responsible for killing the bacteria and which elements of the peptides modulate the immune system. They then try to create the smallest possible peptides that display the desired characteristics in order to develop cost-effective drugs. The eventual application of HDPs as alternatives for antibiotics in livestock and companion animals will have two benefits. First, any decreases in the amount of naturally occurring peptides in the animal can be corrected, perhaps via additives in the animals' feed. Second, HDPs can be used to cure animals or protect them against infectious diseases. The latter is the specific object of the ASIA project.

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