

# Researchers find peptide produced by giant panda fights fungi and bacteria

January 3 2013, by Bob Yirka

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(Medical Xpress)—Researchers working at the Life Sciences College of Nanjing Agricultural University in China have found that giant pandas naturally produce a peptide that can kill fungi and bacteria. In their paper published in the journal *Gene*, the researchers describe how they came across the peptide as they were performing DNA analysis on the animals. They also report that they have been able to synthesize the peptide in their lab and have tested its antibacterial abilities.

The peptide, called cathelicidin-AM, is one of a group of cathelicidins – small cationic antimicrobial peptides that are found in many species including primates, mammals, birds, marsupials, etc. Their purpose is to protect the host from fungal, viral, bacterial and [parasitic infections](#).

They can operate as an immune response or by directly killing invaders.

The researchers believe that the newly found peptide might become one of the new tools used by medical science to aid in fighting bacterial infections – traditional methods have become less useful as bacteria have developed immunity to them. Cathelicidin-AM might be used to help infected patients or as a cleaning agent for surfaces or instruments in hospitals and other facilities.

After successfully synthesizing the peptide in their lab, the team tested its ability to kill *Staphylococcus sciuri* against [Clindamycin](#), a commonly used antibiotic. They found that cathelicidin-AM was able to kill the bacteria in as little as one hour, whereas Clindamycin took nearly six.

In speaking with *The Telegraph*, project lead Dr Xiuwen Yan said that the newly synthesized peptide shows promise as an [antimicrobial agent](#) against a wide range of microorganisms and appears to be equally effective against drug-resistant microorganisms. He added that research into discovering new ways to battle invasive elements has become increasingly important as many microorganisms have developed immunity to [conventional drugs](#). Research, such as that being done by the college that look into antimicrobial peptides encoded in genes, is important he added, because it offers the possibility of developing agents that don't allow microbes to develop immunity to them.

The work by the team in China is just one of many efforts currently underway studying the antimicrobial abilities of peptides. Another team, for example, funded by the UC School of Veterinary Medicine, studying feline cathelicidin has also met with some success. Their work has been published in a recent issue of PLUSONE.

**More information:** The cathelicidin-like peptide derived from panda genome is a potential antimicrobial peptide, *Gene*, Volume 492, Issue 2,

25 January 2012, Pages 368–374.

[dx.doi.org/10.1016/j.gene.2011.11.009](https://doi.org/10.1016/j.gene.2011.11.009) ,

[www.sciencedirect.com/science/ ... ii/S0378111911006652](http://www.sciencedirect.com/science/.../ii/S0378111911006652)

## **Abstract**

A novel cathelicidin-like antimicrobial peptide was identified by mining genome of panda. This peptide (cathelicidin-AM) was synthesized. It showed potential antimicrobial activities against wide spectrum of microorganisms including Gram-negative and -positive bacteria, and fungi. It had similar antimicrobial abilities against both standard and clinically isolated drug-resistant strains. Cathelicidin-AM could rapidly exert its antibacterial activities. It just took less than 1 h to kill all *Staphylococcus sciuri* at the concentration of 2, 4 or 10 times of minimal inhibitory concentration (MIC) while clindamycin took 6 h.

Transmission electron microscopy (TEM) and scanning electron microscopy (SEM) analysis indicated that cathelicidin-AM killed bacteria by directly affecting bacterial cell wall and membrane.

Phylogenetic analysis revealed that the panda cathelicidin had the nearest evolution relationship with dog cathelicidin. The current work provides a novel cathelicidin-like peptide with strong antimicrobial abilities.

via [The Telegraph](#)

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