

Feline calicivirus

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Technology description

Treatment of feline calicivirus (FCV)

Description

The National Laboratory of Microbiology (NML) has developed a treatment for CVF. Researchers at NML found that asparaginase, an aminohydrolase, inhibited the reproduction of CVF. Asparaginase can be used for antiviral or anti-CVF drug development and used in combination with vector. Appropriate doses of asparaginase are thought to reduce viral load, prevent infection and reinfection, reduce viral transmission and alleviate symptoms.

NML researchers exposed cat kidney cell samples from the CFRK line to a CVF strain. They added the same amount of asparaginase or glutaminase, another amidolytic enzyme, to each sample, while the other, the control, had not been exposed to any of the amidolytic enzymes. Viral replication was inhibited by about 90%. 100 of that asparaginase sample were compared to the control sample or the glutaminase sample. The researchers later found that the inhibitory effect of asparaginase was dose-dependent. The specificity of asparaginase to CVF was that it could not inhibit adenovirus replication. The exact mechanism of inhibition of CVF replication remains to be determined.

Business Opportunities

The global prevalence of cat calicivirus and the emergence of new vaccine-resistant strains highlight the urgent need to develop a therapeutic approach using asparaginase-inhibiting CVF technology developed by NML. In the veterinary medicine market, this treatment may conquer the world market. There is no doubt that a large number of cat owners will want to protect their animals. The technique can also be used to treat other caliciviruses, such as those that affect humans.

Challenges

Feline calicivirus infects all cat breeds, causing upper respiratory symptoms, pneumonia, oral ulcers, arthritis, and sometimes death.

Calicivirus calicivirus (CVF) is easy to spread and difficult to culture. It is a single-stranded RNA non-enveloped virus of the Caliciviridae family of viruses. It is a small round virus with positive polarity.

These viruses are transmitted through close contact, contaminated food and aerosols. They are heat-resistant and ether-resistant and stable in acidic media, making their transport difficult to prevent. Despite the decline in vaccine-induced clinical cases, the global presence of CVF remains important. New strains are emerging, some of which can cause highly contagious hot-bleeding syndrome. The infected strain is too different from the strain currently targeted by the vaccine to protect immunized cats. Therefore, new vaccines and treatments need to be developed to protect cats from the virus. Considering the similarities between the two viruses, the technology used to treat feline calicivirus is thought to be suitable for other caliciviruses, especially those that attack humans.

Institution

[Public Health Agency of Canada \(PHAC\) - Agence de la santé publique du Canada \(ASPC\)](#)

联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com