

Preliminary Study on the Mechanical Effect of Volatile Components of Artemisia Argyi Fumigation on Virus in the Fencing Effect of Epidemic Prevention

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Abstract

At present, China has effectively controlled the spread of novel coronavirus COVID-19 by adopting measures such as closure and disinfection. Among them, the traditional method of air mugwort fumigation has played an important role in the prevention and control of epidemics. This method has even been included in the epidemic prevention documents of governments in nine different epidemic areas, which was rare in the past, as shown in Figure 1. This series of events triggered our thoughts on the prevention mechanism of moxa fumigation: to explore the mechanism of the effect of moxa fumigation on the prevention and control of new coronavirus COVID-19, and to make this extremely simple, low-cost and effective method to control the spread of viruses popular in developing and underdeveloped countries on the basis of science.

Keywords: lysosomal antibodies; fumigation

Research profile

Novel Coronavirus epidemic control, a series of combined health management fence system has been applied in the world, fence has been effective in the prevention of epidemic, harmful and infectious diseases, such as Middle East Respiratory Syndrome (MERS), influenza (FLU), Severe Acute Respiratory Syndrome (SARS). The same is true for thousands of years of Chinese history.

The system is mainly composed of 5 fences: 1. Environmental cleaning, 2. Indoor air disinfection, 3. Wear a mask, wash hands, eat separately, 4. Improve immunity diet 5. Exercise. Fence implementation has to be specific to each person's behavior, we hope to scientific evidence to improve people's cognition, make it a conscious action. Therefore, the prevention mechanism of the fumigation of wormwood used in the second fence against novel coronavirus was studied, and the more serious implementation was promoted on the basis of scientific cognition, especially to the unknown and unpredictable outbreaks.

In this study, novel coronavirus transmission routes include: droplets or aerosols in the air; The air disinfection of moxa fumigation, as a "fence" to reduce the activity of virus aerosol infection, and it can interfere with the movement of virus in the air and the "crown" behavior paradigm: the components in wormwood, such as caryophene, it can be hit by a machine that moves through the air, 1) turn the linear motion of the virus into rotation; and 2) the vibration mode of the virus can be disturbed and

changed by mechanical impact on the "crown". Both effects play an important role in virus epidemic prevention.

(1) Analysis of the overall rotation of the virus caused by impact Some of the molecules in mugwort are in the air, and we might as well call them "mugwort molecules". Due to the irregular thermal movement of moxa molecules in the air, we believe that it will have a high probability of colliding with the virus. However, when the above molecules do not directly collide with the virus molecules in one dimension, part of their kinetic energy will be converted into the rotational energy of the virus, thus leading to the overall rotation of the virus.

When all the kinetic energy of moxa molecule is converted into the rotational energy of virus molecule, and the original rotational energy of virus molecule is zero, the above process can be described by the following equation:

$$M v^2/2 = J\omega^2$$

In this case, M_1 and v_0 are respectively the mass and initial velocity of mugwort molecules, and J and ω^2 are respectively the rotational inertia of virus molecule and the self-rotational velocity after impact.

The above process can simulate the moxa molecule as ball 1, virus molecular simulation for ball 2, which is shown in Figure 1: when virus molecules along the x axis translational molecular collision in v direction, the virus will instantaneous rotation, centered on O2 rotation makes the

champions lost the direction of the translation of the virus, unable to pinpoint infect object, reduce infectious.

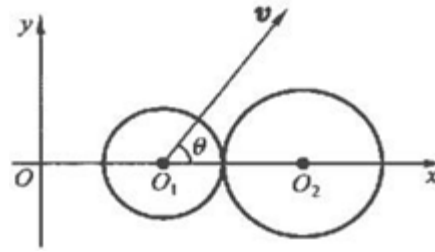


Figure 1: The virus molecules collide with each other in the V direction as they move along the X axis

(2) The interference of impact on the vibration of virus "crown"
 We considered that the impact of moxa molecule on the virus would cause the crown of the new crown to form a new vibration state, making the impacted "crown" lose its infectivity to cells, thus affecting the infectivity of the whole virus. Even when the impact is strong enough, it can break off the "crown" of the virus, leading to permanent inactivation and directly reducing the infectivity of the virus molecules. We assume that the maximum angular variable of the "crown" of the novel coronavirus molecule is a fixed value, set as Φ .

- ① If the "crown" of the virus molecule is broken by impact, then the virus is inactivated here, and the purpose of the virus prevention of the molecule is achieved.
- ② If the "crown" of the virus is hit to the maximum angular variable Φ , as shown in the simulation figure in Figure 2, then the "crown" will act as a damped vibration, which will have a continuous impact on the activity of the crown, until the next impact of Ii molecules on it again has a superposition effect.

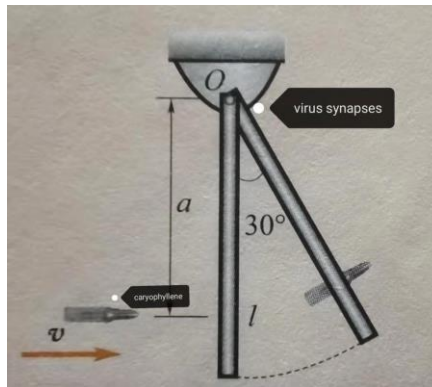


Figure 2: The "crown" of the virus is hit to the maximum angular variable Φ , 30°

For further discussion of this situation, the following equation can be used to describe our hypothetical motion:

$$\frac{d^2 x}{dt^2} + \frac{\alpha}{m} \frac{dx}{dt} + \omega^2 x = 0$$

Where t represents the time of vibration, x represents the displacement of vibration, m represents the mass of its "crown", ω is

the natural angular frequency of the vibration system, and α is the damping coefficient.

When mugwort molecules collide with the "crown" of viral molecules, the amplitude of its damping vibration will be larger and the frequency higher. Figure 3 and Figure 4 show the mathematical images of the vibration of mugwort molecules when they collide with the "crown" of viral molecules and the vibration of molecules in the air when they collide with the "crown" of viral molecules.

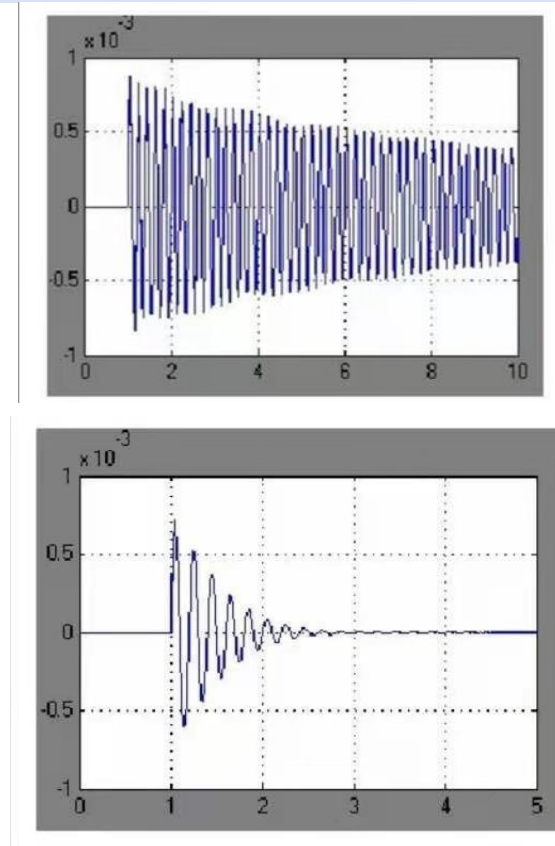


Figure 4: "crown" vibrations of air molecules hitting viral molecules

Based on the above equation, we can analyze the epidemic prevention mechanism of moxa moxa to a certain extent.

Conclusion

It can be seen from the explosion of novel coronavirus global spread that only relying on the government's response to prevent and control the virus will often miss the best time, and it is necessary to cultivate good behavior and respond to the prevention and control. The end of COVID-19 may also be the beginning. No matter how great man thinks he is, a little virus can bring the world to a halt. We need to reflect and improve. The novel coronavirus epidemic, in which about 15% of COVID-19 patients worldwide are critically ill, has overwhelmed hospitals, leaving the world facing an unprecedented public health crisis, as well as an

economic and humanitarian crisis. Vaccine can only be effective in the body, not against the virus in the air. If we can reduce the degree of virus infection through effective prevention, there will not be too many people getting sick at the same time, running out of medical resources, so there will be more patients with reduced symptoms and more effective treatment.

The fence principle has been applied to the food industry for more than 70 years with remarkable effect by temporarily and permanently inhibiting the infection of microorganisms, including bacteria, viruses, fungi and a few algae, in addition to viruses. The infection of infectious virus is similar to the infection of microorganism in food, and the fumigation of moxa artemisiae has the application tradition of Chinese traditional medicine. Therefore, we can make use of the idea and method of fence to carry out in-depth research.