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Research Progress on the Mechanism of Action of Moxibustion

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Abstract: ***Moxibustion therapy for the treatment of diseases has the advantages of wide indications and stable efficacy, and its mechanism of action is an important issue in the field of acupuncture and moxibustion. The mechanism of action of moxibustion therapy is an important issue in the field of acupuncture and moxibustion. Through the collation and analysis of literature related to moxibustion treatment of various diseases in the past ten years, the mechanism of action of moxibustion therapy was summarized from the effects of moxibustion drugs, the effects of moxa smoke, the nervous system, the immune system, and the metabolism of the organism. In this paper, we summarize the research progress on the mechanism of action of moxibustion to provide reference for the clinical use of moxibustion therapy in the treatment of diseases.***

Keywords: Moxibustion, Mechanism of action, Review**.**

1. Introduction

Moxibustion therapy is an important part of acupuncture in Chinese medicine, which has the effects of warming the meridians and dispersing cold, warming the meridians and channels, activating blood circulation to expel paralysis, replenishing the deficiency and assisting yang, eliminating blood stasis and dispersing knots, as well as preventing diseases and health care. In recent years, the research on the mechanism of action of moxibustion has made great progress, and we hereby summarize the research on several mechanisms of action of moxibustion to provide reference for the in-depth exploration of the mechanism of action of moxibustion.

2. The Medicinal Effects of Moxibustion

Mugwort is warm in nature and can warm the menstruation, disperse cold, relieve pain, enhance immunity, stop bleeding and anticoagulation, activate the complement, antibacterial, anti-inflammatory, anti-virus, anti-oxygen radicals and other effects. Spacer moxibustion is based on moxibustion with the addition of ginger, garlic or Chinese herbs to warm the menstruation and dissipate the cold and the effect of Chinese herbs. Ginger, garlic or herbs are placed on the human body points with thin cuticle, under the action of moxibustion heat, spacer moxibustion allows the drugs to be absorbed transdermally, so that the drugs are absorbed into the body at a certain rate through the skin, the capillaries, so as to play the role of the drugs.

3. The Role of Moxa Smoke

Mugwort smoke has antibacterial and antiviral properties, anti-inflammatory, improves immune function, anti-aging, etc [1][2]. It can inhibit many bacteria and viruses that cause epidemic or infectious diseases. And moxa smoke contains a large number of volatile oil components, moxa volatile oil has a good transdermal absorption effect, so part of the treatment of moxa smoke can penetrate into the human body, in the body to produce drug action [3]! Some scholars have found that moxa smoke can also play a role in improving immunity, relevant studies have shown that moxa smoke can raise the white blood cell count in mice, the thymus and spleen are the main immune organs, by observing the effect of moxa smoke on the thymus index and the spleen index, found that moxa smoke can protect the thymus and spleen, so as to improve the immunity of the organism. However, mugwort smoke also has side effects. Long-term inhalation of high concentrations of mugwort smoke can cause cardiovascular and respiratory diseases [4]. Animal experiments have shown that long-term inhalation in high concentrations of mugwort smoke can make rats less sensitive to smell, but also lead to lung damage, high concentrations of mugwort smoke can lead to the death of mice [5-7]. So, it is also important to use moxibustion therapy appropriately.

4. Thermal Radiation Effects of Moxibustion

Moxibustion therapy is a thermal radiation stimulation based on infrared. Thermal radiation is a way for objects with temperature to transmit heat outward in the form of electromagnetic waves. The warming effect of moxibustion is mainly reflected in the two aspects of warming and warming. The warm stimulation of moxibustion can touch the local temperature receptors and pain receptors of the body, stimulate the central nervous system to regulate the body systemically, and produce the warming effect, thus producing the immune effect [8]. In addition, moxibustion can also mobilize the body's immune response, regulate immune factors, complement molecules, immune cell function, enhance the body's immune and repair function, to achieve the role of warm tonic [9]. In conclusion, moxibustion can produce immune effects through multiple pathways and promote the restoration of visceral functions and immune regulation.

5. Light Effect of Moxibustion

All objects in nature, as long as the temperature in the absolute temperature above zero, are in the form of electromagnetic waves at all times to transmit heat outward, this way of transmitting energy is called radiation. Modern research [10]

shows that the emission spectrum of moxa burning is in the range of 600 nm ~ 15 μm, with the peak of the wave around 3.5 μm, mainly infrared light, containing a small amount of visible light. Light effect is one of the important factors of moxibustion, moxa burning far-infrared photons can make moxibustion local temperature rise, warm effect, near-infrared photon radiation can reach the body, promote the human body to produce a lot of energy for the body metabolism to provide the energy needed to accelerate metabolism, improve cell activity, enhance immune function [11]. In addition to this, it is also capable of inducing heat-dependent alterations in dermal cells, thus regulating the synthesis of elastin, protofibrillar proteins, and promoting the improvement of skin microcirculation. Relevant studies have shown that the light effect of moxibustion is very effective in improving stiffness and physical dysfunction, and is especially advantageous in treating diseases such as osteoarthritis of the knee.

6. Moxibustion and the Nervous System

Moxibustion can act mainly on the central nervous system and the autonomic nervous system. The central nervous action mechanism of moxibustion is mostly studied from the perspective of brain-gut axis. Related studies show that the central nervous system of the brain can be directly involved in the regulation of the gastrointestinal tract. Some researchers [12] used moxa to gently moxibustion the Tianshu point and the Shangjiuxu point of rats with diarrhea-type irritable bowel syndrome, and the results show that moxibustion can effectively improve the condition of rats. Moxibustion can also act on the autonomic nervous system, and the neurotransmitters secreted by the autonomic nervous system can directly act on the enteric nervous system, participate in the regulation of gastrointestinal physiological functions, and can nourish the gastric mucosa, improve the contraction ability of the smooth muscle of the gastrointestinal tract, and enhance the gastrointestinal peristalsis. Related research [13] found that moxibustion foot Sanli point can improve free radical metabolism level, enhance the anti-oxidative stress ability, regulate the structure of intestinal flora, maintain intestinal flora homeostasis, so as to achieve the purpose of delaying the aging of rats. It can be seen that moxibustion and the nervous system are inseparable.

7. Moxibustion and the Immune System

Immune dysfunction is an important cause of many diseases, and the therapeutic effect of moxibustion is to stimulate the body's specific immune function, so that the overexpressed or reduced immune function tends to normalize. Relevant studies [14] have shown that the immunoglobulin level of the Shenque acupoints of the elderly increased significantly after moxibustion was applied to them. Ren Chaoxue [15] found that after moxibustion was applied to the foot-sanli point of athletes, the decline of their humoral immune function could be suppressed. It can be seen that moxibustion not only affects the content of serum immunoglobulin in normal organism, but also has a positive regulatory effect on the diseased organism, which can enhance and improve the immune function of the organism to a certain extent.

8. Moxibustion and Metabolism

Endogenous metabolites are some of the products produced and found in the body, such as blood, urine, and feces, which are important for both physiological and pathological responses in the body. Moxibustion can improve clinical symptoms by regulating the indicators of endogenous metabolites. Some studies [16] have shown that there are dynamic changes in metabolite profiles, metabolic markers and metabolic pathways in the stomach, brain tissues of rats in the early and middle stages of life after moxibustion of the bilateral Liangmen, and the foot-sanli, which shows that moxibustion can affect the metabolic level of gastrointestinal tissues, and to a certain extent can regulate the concentration of metabolites faster, which helps to promote gastrointestinal dynamics, and to restore gastrointestinal function from the overall perspective.

9. Conclusion

The mechanism of moxibustion therapy is the result of interaction between multiple actions. Currently, there is still a lack of big data to support the mechanism of moxibustion therapy, and there is also a lack of research on the safety of moxa smoke. In the future, we should pay more attention to large samples, multi-center data, and develop a variety of moxibustion imitation instruments, which will help us to achieve a safe and controllable stimulation method, as well as appropriately reduce the large amount of moxa smoke on the stimulation of the human body, and it will provide opportunities for the modernization of the development of moxibustion therapy. The development of these instruments will help us to realize a safe and controlled stimulation method, and also properly reduce the stimulation of a large amount of moxa smoke to the human body, which will provide an opportunity to modernize moxibustion therapy.

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