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SPACE MEDICINE BRANCH REPORT

Space Medicine in China

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The research of space medicine in China is conducted primarily at the Institute of Space Medico-Engineering (ISME), which was founded in April 1968 in Beijing. Although no astronaut from China has flown in orbit so far, some interesting advances have been made in studies involving aspects of space medicine.

The most unique feature of space medicine in China is the application of Chinese Traditional Medicine to the studies of medical and physiological problems related to spaceflight. Chinese medicine is a system based on practical experiences. One of its main principles is to correct the biased functional state of the human body using herbs or other natural means. We believe that Chinese medicine possesses a potential for solving selected medical problems during spaceflight. Results obtained from experiments so far have shown that a combination of Chinese medicine and space medicine is promising. Examples of such applications are briefly reported here.

Several attempts have been made to arrest space motion sickness. Testing the efficacy of electrical stimulation at auricular acupuncture points with magnetic acupuncture-

massage to prevent motion sickness symptomatology by Coriolis or head-down tilt swing, it was found that the effective rates were between 60-70% in subjects with moderate or high stability. By acupoint magnetic application, visually-induced motion sickness symptoms were significantly alleviated and, at the same time, the levels of epinephrine and 17-OHCS in the blood were significantly reduced. Also, it was observed that a Chinese prescription developed for emperors of Qing Dynasty called "Pingadan" (i.e., safety pill) was as effective as scopolamine, but with fewer side effects.

Chinese prescription and stimulation of extremely low frequency field (LMF) together were effectively applied to improve the condition of bone in hind limbs of suspended rats. If tested separately, however, Chinese medicine showed a much more pronounced improvement than magnetic stimulation.

To improve microcirculatory bloodflow affected by the headward shift of body fluid, the effects of two selected Chinese prescriptions, which are known to invigorate blood circulation, were studied in clinical application. If applied in head-down tilt rabbits, it

was found that rheological and pathological indices, if compared with a control group, were significantly improved by the Chinese medicine, particularly by one called "Dan-Huang."

The correction function of one kind of Rhodiola, which is an adaptogenic drug, was tested in 7-day suspended rats. The decreases of body weight, thymus and soleus weight as well as the myoprotein content in soleus were significantly corrected by the Chinese medicine used. Another study indicated that the mixture of Ginseng and Rosa davurica Pall was able to protect the immune function from the significant reduction induced by noise.

The Chinese Qigong, a kind of self-control exercise, was also used in space medicine studies. If the responses to a 7-day -6° head-down bed rest in two matched groups, of which one group was doing Qigong exercise during bed rest, were compared, physiological and biochemical indices as well as subjective feeling were significantly better in the Qigong group than in the control group. The endurance time of the Qigong group during head-up tilt test after bed rest was 13.8 ± 2.4 min, compared to 6.2 ± 3.2 min for the control group.

Research in this field is continuing. It is necessary to know more about the "what" and "why" before the means developed can be applied to real spaceflight.

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