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THE BIOLOGICAL BASIS OF THE KIDNEYS GOVERNING THE BONE

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Kidneys are important organ for the human body. In traditional Chinese medicine (TCM), there are many unique theories, "the kidney governing the bone" is vital one. Application of this theory on clinical treatment of bone diseases has been for over thousands of years, and the effectiveness of kidneys reinforcing prescription have also been confirmed by clinical practices. But, up to now, the mechanism of "the kidney governing the bone" remains unclear. In recent years, study on TCM theory has been focused by scholars and variety of hypothesis about the mechanism of the kidney dominating the bone have been advanced. The main viewpoints may be summarized as (1) by affecting vitamin D absorption, (2) by regulating the trace elements such as calcium and phosphorus metabolism, (3) by regulating the secretion and metabolism of the growth hormone, (4) by affecting OPG-RANKL-RANKL signaling pathway, (5) by regulating the neuroendocrine-immune network [1]. It seems to be that the kidneys through a variety of ways to regulate the process of bone growth and metabolism. But all these viewpoints need direct systemic experimental evidence to support a reasonable modern physiological explanation.

Recently, many studies indicated that sex hormones play indispensable roles on the skeletal size and shape during growth, and contribute to the homeostasis of skeleton [2]. On the other hand, major function of kidneys in TCM are believed to be function of the hypothalamic-pituitary-gonadal axis (HPG axis) [2]. As all know, the HPG axis carries out its function through the sex hormones. This article aims to explore the modern science mechanism of TCM theory "kidneys govern the bone". Here, we propose a new explanation for the theory that the "kidneys" in TCM govern the bone by regulating the function of sex hormones and its receptors.

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THE EFFECT OF ADAPTOGENS ON THE LIPID PEROXIDATION OF THE LIVER IN THE CONDITIONS OF HEAT EXPOSURE

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Summary. Heat exposure stimulates the generation of reactive oxygen species, inducing peroxidation of lipids, resulting in the development of hypoxia. In experimental conditions the possibility to correct free radical lipid oxidation of rats' organism membranes was studied with the oral introduction of the phytoadaptogens that contains the complex of natural antioxidants. The application of the phytoadaptogens in the conditions of long heat exposure of the organism of animals under experiment leads to the stabilization of the processes of peroxidation against the increase of antioxidant system activity.

Key words: phytoadaptogens, extract *Eleutherococcus*, extract *Radiola*, extract *Liquorice*, heat exposure, lipid peroxidation.

Modern environmental conditions dramatically increased the level of radical processes in the body. Heat exposure stimulates the generation of reactive oxygen species, inducing peroxidation of lipids, resulting in the development of hypoxia. The oxidative stress is the pathogenic moment in the development of many diseases: inflammatory, broncho-pulmonary, cardio-vascular and other diseases. In this connection the search for the new ways of the correction of oxidation during heat exposure is actual because the increase of adaptive possibilities of a man with the help of pharmacological means becomes the important moment in prophylaxis of diseases and pathologic conditions [2, 5].

Materials and methods. In experimental conditions the possibility to correct free radical lipid oxidation of rats' organism membranes was studied with the oral introduction of the phytoadaptogens. The animals were divided into 5 groups and each of them had 30 rats: intact animals (1) which were held in standard conditions of vivarium; the control group (2) in which rats were exposed to heat during forty-five minutes daily; the experimental groups (3, 4, 5) in which before the effects of heat animals had a daily oral intake of the extract *Eleutherococcus*, of the extract *Radiola*, of the extract *Liquorice* in a dose of 1 ml/kg. The intensity of peroxidation processes was assessed by examining the contents of hydroperoxides lipids, diene

conjugates, malonic dialdehyde and the main components of the antioxidant system, (ceruloplasmin, vitamin E) in the liver of animals. The results obtained were subjected to statistical analysis with calculation of parametric criteria Student.

It was found out that in the liver tissue of experimental animals a daily heat exposure during forty-five minutes contributes to the increase of lipid hydroperoxides level (by 34 – 41%), of diene conjugate (by 45 – 50%), and of malonic dialdehyde (by 62 – 74%) against the decrease of antioxidant system activity in the liver of intact animals. The introduction of the phytoadaptogens to rats in the conditions of heat exposure contributes to the reliable decrease in the liver of lipid hydroperoxides by 22 – 28%, of diene conjugates – by 22 – 32%, and of malonic dialdehyde by 30 – 37% in comparison with the rats of the control group. While analyzing the effect of the phytoadaptogens on the activity of the components of antioxidant system it was shown that the level of ceruloplasmin in the liver of animals was reliably higher by 68 – 82%, of vitamin E by 42 – 65% in comparison with the same parameters of the rats of the control group.

So, the application of the phytoadaptogens in the conditions of long heat exposure of the organism of animals under experiment leads to the stabilization of the processes of peroxidation against the increase of antioxidant system activity.

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THE EXPERIMENTAL STUDY ON THE MOLECULAR MECHANISM OF THE EFFECT OF ACUPOTOMY ON CHONDROCYTE OF KNEE OSTEOARTHRITIS

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Abstract Osteoarthritis of the knee is a kind of arthritis, mainly in the knee joint, knee joint surface abnormal structure change as the main case, such as bone hyperplasia, bone wear, bone degeneration, etc.. [1] The final development of arthritis disease. This experiment adopts the Acupotomy operation model for treatment of knee osteoarthritis in rabbits, through observation of the response to treatment and a variety of rabbit knee osteoarthritis (KOA) changes of related molecules, evaluation of acupotomy operation treatment, the mechanism of acupuncture therapy and the corresponding inquiry theory. To provide new ideas and theoretical data for the treatment of acupotomy. In this study, KOA model was made by papain injection. The severity of knee injury was assessed using the knee osteoarthritis severity index. Acupotomy group method of operation, the first is in the bone around the knee joint of rabbit arthritis model for pain response, by touching the way of looking for rabbits reaction around the joint pain sensitive and cord like nodules, 5 points as Acupotomy starting point, using Acupotomy and manipulation of releasing and needle knife technique the horizontal and vertical two ways, in which the horizontal to release, to clear the main direction. The effect of acupotomy in the treatment of knee osteoarthritis is obvious, and its mechanism may be related to IL-1, TNF- α , MMP-3 and other cartilage cells.