

significantly ($p < 0.01$, $p < 0.05$, $p < 0.05$). Monkshood and Rhubarb + Monkshood group showed no effects on the enzyme activity of CYP3A4.

Conclusions: CYP1A2 and CYP3A4 were mainly involved in the metabolic of aconitine which is the main toxic ingredients in Monkshood. The results from the present study suggested that Rhubarb make a contribution to induction of CYP1A2 and CYP3A4 in Rhubarb and Aconite Decoction. This could reduce toxicity of Rhubarb and Aconite Decoction. It shows that Rhubarb as monarch drug in a prescription was importance. In addition, Rhubarb and Aconite Decoction prescription could weaken the strong induction of CYP1A2 and CYP3A4 caused by Rhubarb. It suggested that overall concept of traditional Chinese medicine compound. However, further research is needed to understand the relationship between properties theory of Chinese medicinal Herbs and CYP450 enzyme.

Key words: CYP450 isoenzymes ; Rhubarb and Aconite decoction ; Compatibility of Medicines in prescriptions ; metabolic drug interactions

Reference

- [1] Nebert DW, Russell DW. Clinical importance of the cytochromes P450. *Lancet*[J]. 2002;360(9340):1155–62.
- [2] Testa B, Pedretti A, Vistoli G. Reactions and enzymes in the metabolism of drugs and other xenobiotics . *Drug Discov Today*[J]. 2012;17(11–12):549–60.
- [3] Nebert, D.W., Russell, D.W., Clinical importance of the cytochromes P450[J]. 2002, *Lancet*, 360(9340), 1155–1162.
- [4] Hao haiping, Zheng Chaonan, Wang Guangji. Thoughts and experimental exploration on pharmacokinetic study of herbal medicines with multiple-components and targets[J]. *Acta Pharmaceutica Sinica* 2009, 44 (3): 270–275
- [5] Laurence Brunton, Bruce Chabner, Bjorn Knollman. Goodman & Gilman's: The Pharmacological Basis of Therapeutics[M]. 12th edition. New York, 71–91.
- [6] Pelkonen, O., Turpeinen, M., Hakkola, J., et al. Inhibition and induction of human cytochrome P450 enzymes: current status[J]. *Arch. Toxicol.*, 2008. 82(10), 667-715.
- [7] Zhou Honghao. Pharmacogenetics[M]. People's military medical press, 2003:53-54.
- [8] Rong Wang, Yuhuan Sun, Qiang Yin, et al. The effects of metronidazole on Cytochrome P450 Activity and Expression in rats after acute exposure to high altitude of 4300 m[J]. *Biomedicine & Pharmacotherapy*, 2017, 85: 296–302.
- [9] Wang Riuling, Wang Xianfa, et al. Poisoning causes and treatment methods of Radix Aconiti and Aconitum[J]. *Chinese Pharmaceutical Journal*, 2001, 36(5):352-353.

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EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION FOR SHORT-TERM SPATIAL MEMORY IN HEALTHY PEOPLE

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Abstract Transcranial direct current stimulation (tDCS) is one of the techniques of non-invasive brain stimulation. Over 50 years ago, it was shown that a slight impact on a subthreshold direct current cortex animals leads to a change in the activity of the cortical neurons that lasts a certain period of time and on completion of exposure. Similar effects can be achieved by noninvasive stimulation of human brain. Apparently, the primary mechanism of this phenomenon is the subthreshold membrane potential changes, while aftereffect synaptic plasticity is associated with glutamatergic synapses.

Key words: tDCS, transcranial direct current stimulation, brain, spatial memory.

Spatial memory is a critical skill for all people. According to the data available, the process of working spatial memory can be divided into three successive stages: 1) treatment facility; 2) processing of its spatial location and 3) object processing in the context of its place. Spatial processing of the object can be done by means of two approaches: coordinate and categorical. It has been shown, morphological substrate of these actions is the posterior parietal cortex of the left and right hemispheres of the brain, respectively. This functional magnetic resonance imaging and studies use of non-invasive methods of brain stimulation confirms the existence of this asymmetry in the spatial memory. As described in the introduction of the work analyzed morphological substrate categorical and coordinates processing of spatial information, however, not their influence on spatial memory. In the first initially, a similar study was conducted by Heather et al, which that demonstrated the ability of transcranial brain stimulation constant direct current of 2 mA power to change certain types of spatial memory, depending on the stimulation area. In connection with these in this regard, we have assumed that lower amperage, part of the range of 0.5-2 mA exerts influence on certain types of spatial memory, using the standard arrangement of electrodes in the points P3- P4 + and P3 + P4-.

Materials and methods 18 volunteers participated in the experiment. To study were taken 18 healthy volunteers, 10 men and 8 women, aged 18 to 23. All the subjects of the study appropriate the following criteria match the following criteria: (1) do not take medications that affect the central nervous system; (2) showed no abnormalities in conventional medical and neurological examination; (3) are right-handed; (4) had no signs of dementia; (5) did not show any sign of depression; (6) showed no sign of alarm.

The experiment used the point of stimulation P3 and P4 on the International 10-20 EEG system. These points

correspond to the posterior parietal cortex. Stimulation was carried out with direct current, the power of 0.7 mA, using a silicon electrode (3 x 2.5 cm) and a conductive gel "Akugel-electro", stimulation time was 20 minutes. We used three kinds of stimulation: 1) P3- P4 + - P3 point located on the anode to the cathode point P4; 2) P3 + P4-, on P3 located at the cathode to the anode point P4; and 3) P3 P4 0 0 - or placebo influence.

Participants of the experiment exposed three sessions of stimulation with an interval between them within three days. This range allows you enables to prevent the cumulative effect of stimulation. Therefore, each of the participants took three different stimulation embodiments in random order. After the stimulation, the participants performed the following two tasks:

- Spatial Memory Game that is used to determine the level of short-term categorical spatial memory in subjects.
- Spatial Span Test from Cambridge Brain Sciences that is used to measure short-term spatial memory level coordinate.

Assessment of the side effects of stimulation is evaluated by collecting complaints men or women during and after stimulation

Results A comparative analysis of the results performance of tasks after various stimulation modes (see vide Table 1). The differences between the "active" stimulations (P3-P4 +, P3 + P4-) and placebo stimulation have been identified.

Table 1. Results performance of tasks in different types of stimulation

	P3-P4+	P3+P4-	Placebo
Number of points Spatial Span	6,05±0,99	5,88±1,02	6,11±0,96
Number of points Spatial Memory	16,93±4,98	18,28±4,95	18,67±4,99
The amount of pixels Spatial Memory	190,11±92,99	178,95±83,56	161,21±73,75

According to the data from other sources, stimulation of type P3- P4 + allows you to increase the efficiency of the spatial coordinate storage, and the impact of direct current in a mode P3 + P4 mainly affects the categorical type of this memory. However, our findings are contrary to contradict this source which we followed during the whole experiment. We believe, that lack of effect associated with is related to insufficient current (0.7 mA). However nevertheless, given the current strength used is included in the range of 0.5 to 2 mA according to the respective scientific articles.

Conclusion Having analyzed the results, we can conclude that the use of current 0.7 mA does not affect spatial memory in of healthy people, the electrode positions and P3- P4 + P3 + P4. Further research will be aimed at increasing current strength, while maintaining the position of the electrodes and P3- P4 + P3 + P4.

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THE CLINICAL APPLICATION RESEARCH PROGRESS OF SEMEN PHARBITIDIS

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Key word : Semen Pharbitidis, Clinical Application, Research Progress

Semen Pharbitis is firstly recorded in the 'Ming Yi Bie Lu'. It can cause watery diarrhea to be laxative, dissolve phlegm and flush rheum, and tap stagnant with insecticide. Clinically, it is used for the treatment of edema puffiness, fecal and urinary stoppage, retention of phlegm and fluid, inverse gas and cough, abdominal pain due to parasitic infestation, etc. Semen Pharbitis is the object of drug property theory of Chinese medicine study. Now the progress statement of its clinical application is as follows:

The Study on Clinical Application Zhiqiang Huang with self – made Er Chou Decoction treated 20 cases of ascites due to cirrhosis. Jiwen Hu with folk prescription of semen pharbitis cured liver ascites effect. Jun Xu treated nephrotic syndrome with symptoms of surface floating limb swollen, or with pleural effusion, also received a better effect. Jianming Qi used semen pharbitidis to treat intractable constipation. Yuqin Yan used fried pharbitic powder to treat 25 cases of intractable constipation. Clinically it can be used separately, or be added compound blunt mixing with water, but not into the decoction. Xi Wu added Hei Chou and Bai Chou into the Bao He Wan, a Chinese herbal compound, to treat epigastric pain by administration decoction. Shaoxun Liu, a famous traditional Chinese medicine doctor, used semen pharbitidis to cure patients with epigastric pain resulted from diet stagnation. Clinical treatment effect of semen pharbitidis is obvious, and the application is worth promoting. Shuchan Li used pharbitidis, Rheiradix et rhizoma and Arecasemen cured 69 cases of pediatric pneumonia. Meizhong Yue, a famous traditional Chinese medicine doctor, treated children with partial eclipse, indigestion, stagnation and parasitic diseases by using Hei Chou and Bai Chou powder mixed with a small amount of sugar.

Discussion and Prospect Today Modern medicine develops rapidly and has a better and faster effect in the clinical. But, long-term use of Western medicine may be drug resistance or side effects, and some of the treatment is expensive, resulting in patients' not affording to. As a Chinese herbal medicine, semen pharbitidis obtains easily and has low prices. However, there are still some shortcomings. The study on the mechanism of pharmacological and toxicological