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 was20 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 preventthe cumulative effect of stimulation. Therefore, each of the participants took three different stimulation embodiments in random order. After the stimulation, the participants performed the followingtwo tasks:

• Spatial Memory Game thatis used to determine the level of short-term categorical spatial memory in subjects.

• Spatial Span Test from Cambridge Brain Sciences that isused 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 theresults performance of tasksafter 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 SpatialMemory	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 ofdirect current in a mode P3 + P4 mainly affects the categorical type of this memory. However, our findings are contrary tocontradictthis source which we followed during the wholeexperiment. 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 objectof drug property theory of Chinese medicine study. Now the progress statement of its clinical application is as follows:

The Study on Clinical ApplicationZhiqiangHuang with self – made Er Chou Decoctiontreated 20 cases of ascites due to cirrhosis.JiwenHuwith folk prescription of semen pharbitidiscured liver ascites effect.JunXutreatednephrotic syndrome with symptoms of surface floating limb swollen, or with pleural effusion,also received a better effect.JianmingQiused semen pharbitidis to treat intractable constipation. YuqinYan used fried pharbiticpowder to treat25 cases of intractable constipation. Clinically it can be used separately, or be added compound blunt mixing with water, but not into the decoction.Xi Wuadded HeiChou and BaiChou into the BaoHeWan, a Chinese herbal compound, to treat epigastric pain by administration decoction. Shaoxun Liu, a famous traditional Chinese medicine doctor, used semenpharbitidis to cure patients with epigastric pain resulted fromdiet stagnation. Clinical treatment effect of semenpharbitidis is obvious, and the application is worth promoting.ShuchanLiusedpharbitidis, Rheiradix et rhizoma and Arecasemen cured 69 cases of pediatric pneumonia.MeizhongYue, a famous traditional Chinese medicine doctor, treated children with partial eclipse, indigestion, stagnation and parasitic diseases by using HeiChou and BaiChou powder mixed with a small amount of sugar.

Discussion and ProspectToday 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 pharbitidisobtains easily and has low prices. However, there are still some shortcomings. The study on the mechanism of pharmacological and toxi-

cological effects of semen pharbitidis is still insufficient, and further research is needed. It provides a favorable theoretical basis for the clinical application of Traditional Chinese medicine, and makes it serve the human health better.

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DEVELOPMENT OF A UPLC-MS/MS COMPOSITIONAL SUGAR ANALYTICAL METHOD TO DISCRIMINATE POLYSACCHARIDES FROM GENUS EPHEDRA

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ABSTRACT Mahuang is a famous traditional Chinese medicine, has been used for thousands of years for the treatment of allergies, asthma, pneumonia, bronchitis, hay fever and colds。 Ephedra sinica polysaccharides have been reported to possess important immunosuppressive activities, so quality evaluation of polysaccharides from genus Ephedrais extremely urgent. In this study, methods involving enzymatic digestions have been developed to establish multiple saccharide fingerprints through ultra-performance liquid chromatography with electrospray ionization triple quadrupole linear ion trap mass spectrometry (UPLC-ESI-TQ-LIT-MS/MS) based on a multiple-reaction monitoring in negative mode. Under optimum UPLC-MS/MS conditions, excellent separation and quantification of 22 constituents were achieved within 20 min on a solid core column with a 1.6 μm particle using pre-column derivatization with a PMP reagent. This method coupled with principal component analysis has been successfully applied to characterize and discriminate Ephedra polysaccharides attributed to different species and medical parts.

Key words: UPLC-MS/MS; polysaccharides; genus Ephedra; mild enzymatic digestion

Result In this work, a reliable, simple and sensitive PMP pre-column derivatization method was developed for the simultaneous analysis of 21 PMP derivatives characterized by the presence of 7 neutral sugars, 2 uronic acids, 3 amino sugars, 2 acetyl amino sugars, 6 oligosaccharides and 1 degradation product employing UPLC-ESI--TQ-MS/MS technique based on a solid core cortecs C18 column within 20 min. The proposed method was featured by minimizing sample handling and permitting high throughput analysis, and has been successfully applied to analyze 20 Ephedra polysaccharide samples from different species and medical parts. Multivariate statistical analysis results indicated that specific enzymatic digestions (α-amylase, β-(1→3)-D-glucanase and cellulose) could be further used for distinguishing these polysaccharides from genus Ephedra. The enzymatic digestions followed by UPLC-ESI--TQ-LIT-MS/MS coupled with multivariate statistical analysis may be a powerful and practical approach for comprehensive quality evaluation of plant polysaccharides from traditional Chinese medicines.

FRAGMENTATION PATTERN OF SPIROSTANOL STEROIDAL SAPONINS FROM ANEMARRHENA ASPHODELOIDES

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Abstract: Anemarrhena asphodeloides (A. asphodeloides) rhizome roots of liliaceous is widely used to clearing heat-fire, nourishing Yin and moistening dryness, and recorded in "Chinese pharmacopoeia" 2015 edition. So far, more than 50 steroid saponins have been isolated from A. asphodeloides, which is widely used to decrease blood glucose levels, inhibit platelet activity and carcinoma activity. This study applying UPLC-MS/MS methods to analyze Anemarrhena spirostanol reference standards. Finally, fragmentation regularities of four spirostanol steroid saponins are summarized. The four reference standards (RSs) are timosaponin AⅡ (1), timosaponin AⅢ (2), dioscin (3), ophiopogonin D' (4) and gracillin (5), respectively.

Key words: Anemarrhena asphodeloides; spirostanol steroidal saponins; UPLC-MS/MS

Objective: To analysis the fragmentation pattern of spirostanol steroidal saponins from Anemarrhena asphodeloides with UPLC-MS/MS.

Results and Discussion: Similar deductive reasoning was applied to spirostane-type RSs 1-5. Two concise and clear [M+NH4]+ and [M+H]+ ions were obviously observed in the ESI+-EPI (CE,8) spectra for RSs 1-5. In the ESI+-EPI (CE,15) spectra, successive losses of sugar moieties one-by-one were also generated to provide [Agly.+H]+ (RSs 1-5). In addition, the fragmentations of aglycone ions were readily observed in the ESI+-EPI (CE, 35) spectra. Two corresponding ion transitions were involved in [S4+H]+→[S4-C8H16O2+H]+→[S4-H2O-C8H16O2+H]+ (Δm= 144 and 18 Da) and [S4+H]+→[S4-H2O+H]+→[S4-H2O-C8H16O2+H]+ (Δm = 18 and 144 Da) for RSs 1-5. This could be explained through the elimination of E rings and water molecules. The major MS/MS fragment pathways of spirostane-type RSs 1-3 were summarized. Whatever spirostanol SSs, all were characterized by preferential loss of a NH3 (17 Da) from an ammoniated precursor ion in the ESI+-EPI (CE, 8) spectra and then C-3 sugar moiety to afford corresponding protonated aglycones in the ESI+-EPI (CE, 15) spectra. As expected in ESI+-EPI (CE, 35) spectra, diagnostic loss of 144 Da from protonated spirostane-type aglycones was attributed to the absence of an oxygen substitution at the F ring while a neutral loss of 160 Da from protonated aglycones could be ascribed to the presence of an OH group (often seen at C-23) in the F ring. The foregoing deduction processes repeated, neutral losses of 142 and 158 Da ions were readily inferred from corresponding protonated spirostanol aglycones for A. asphodeloides SSs. The neutral loss of 142 Da may be explained by the presence of