

# Therapeutic effect observation on Nie-pinching the spine manipulation for infantile diarrhea due to spleen deficiency

## 捏脊疗法治疗脾虚型小儿泄泻的临床疗效观察

Tang Yu-lan (唐雨兰), Li Tie-lang (李铁浪), Liu Mai-lan (刘迈兰), Luo Jian (罗坚), Li Nan (李南), Yu Jie (郁洁), Yang Qian-yun (杨茜芸)

School of Acupuncture, Moxibustion & Tuina, Hunan University of Chinese Medicine, Changsha 410007, China

### Abstract

**Objective:** To observe the influence of Nie-pinching the spine manipulation on the excretory rate of urine D-xylose in the infants with diarrhea due to spleen deficiency, and to assess the clinical effects.

**Methods:** Sixty infants in conformity with the diagnostic criteria of diarrhea due to spleen deficiency were randomly divided into a treatment group and a control group by the random digital table, 30 cases in each group. The infants in the treatment group were treated by Nie-pinching the spine manipulation and traditional infantile tuina, in addition to the routine basic treatment. The infants in the control group were treated by the same traditional infantile tuina in addition to the routine basic treatment. The infants in the two groups were treated once every day, 4 weeks as a course. Totally, the treatment was given for a course. The symptom integrals of spleen deficiency were used to assess the improvement in the symptoms. The colorimetry was used to determine the excretory rate of urine D-xylose.

**Results:** In the comparison of the same group before and after the treatment, the differences in the global score of spleen deficiency symptoms and the excretory rate of urine D-xylose in the two groups were statistically significant (all  $P < 0.01$ ). After the treatment, the differences in the global score of spleen deficiency symptoms and the excretory rate of urine D-xylose between the two groups were all statistically significant (both  $P < 0.01$ ).

**Conclusion:** Chiropractics can reduce the integrals of spleen deficiency symptoms and elevate the excretory rate of urine D-xylose in the infants with diarrhea due to spleen deficiency, so as to enhance the therapeutic effects by alleviating the symptoms of spleen deficiency and the absorptive function of the small intestine.

**Keywords:** Tuina; Massage; Pediatric Tuina; Chiropractics (Traditional Chinese Medicine); Spleen Deficiency; Diarrhea; Infant

**【摘要】目的:** 观察捏脊疗法对脾虚型泄泻患儿尿 D-木糖排泄率和脾虚症状的影响, 评价捏脊疗法治疗脾虚型泄泻的临床疗效。**方法:** 将符合纳入标准的 60 例脾虚型泄泻患儿按随机数字表随机分为治疗组和对照组, 每组 30 例。治疗组患儿在常规基础治疗基础上接受捏脊疗法和传统小儿推拿治疗, 对照组患儿在常规基础治疗基础上接受与治疗组相同的传统小儿推拿治疗。两组患儿均每日治疗 1 次, 治疗 4 星期为 1 个疗程, 共治疗 1 个疗程。采用脾虚症状积分评价症状改善情况, 采用比色法测定尿 D-木糖排泄率。**结果:** 同组治疗前后比较, 两组患儿的脾虚症状总积分、尿 D-木糖排泄率差异有统计学意义(均  $P < 0.01$ ); 治疗后, 治疗组的脾虚症状积分、尿 D-木糖排泄率与对照组差异均有统计学意义(均  $P < 0.01$ )。**结论:** 捏脊疗法能降低脾虚型泄泻患儿的脾虚症状积分, 升高尿 D-木糖排泄率, 通过改善患儿的脾虚症状和小肠的吸收功能提高临床疗效。

**【关键词】** 推拿; 按摩; 小儿推拿; 捏脊; 脾虚; 泄泻; 婴幼儿

**【中图分类号】** R244.1 **【文献标志码】** A

Infantile diarrhea due to spleen deficiency belongs to diarrheal disease in Western medicine, including protracted diarrhea and chronic diarrhea. Defined based upon their duration, protracted diarrhea lasts  $\leq 2$  months, and chronic diarrhea lasts  $> 2$  months, clinically manifested mainly by loose stool without

odors, diarrhea mostly after meal, lingering diarrhea, in varying severities, sallow complexion, emaciation, low spirit, lassitude, pale tongue, white tongue coating, slow and weak pulse. If diarrhea lasts for a long time, becoming infantile malnutrition, it will influence the growth and development of the infants.

It is believed in modern medicine that the main causative reason of infantile diarrhea due to spleen deficiency includes improper food ingestion, allergy, disaccharidase deficiency, and other factors.

**Author:** Tang Yu-lan, teaching assistant

**Corresponding Author:** Li Tie-lang, professor, mater student supervisor.

E-mail: litielang810@163.com

Therapeutically, the treatment in Western medicine is supposed to avoid dehydration, normalize food ingestion, offer medication and prevent complications. In the acute stage of diarrhea, the treatment is focused to maintain the water-electrolyte balance and prevent infection. For protracted and chronic diarrhea, it is necessary to avoid the intestinal flora imbalance by adopting corresponding dietary therapy. Antibiotics are mostly used in the Western medicine. Although certain effects can be achieved, it is easy to induce drug dependence, lowering the efficacy of antibiotics, influencing the therapeutic effects and also causing harms to the health of the infants. In order to enhance the clinical effects for infantile diarrhea due to spleen deficiency, this study was designed to observe the therapeutic effects of Nie-pinching the spine manipulation for infantile diarrhea due to spleen deficiency. Now, the report is given as follows.

## 1 Clinical Data

### 1.1 Diagnostic criteria and key points for pattern identification in traditional Chinese medicine (TCM)

#### 1.1.1 Diagnostic criteria in Western medicine<sup>[1]</sup>

Over two weeks in the duration, frequent defecation, over three times per day, accompanied by change in the amount or shape of stool (large amount of stool, mostly unformed stool), undigested food or a small amount of lipid drops in routine examination of stool.

#### 1.1.2 Diagnostic criteria in Chinese medicine<sup>[2]</sup>

Loose stool, in light color and no smell, diarrhea mostly after meal, sallowness, emaciation, low spirit, lassitude, pale tongue, white tongue coating, slow and weak pulse, and light fingerprint.

#### 1.1.3 Criteria of TCM syndrome identification<sup>[3]</sup>

Main symptoms: Lingering diarrhea, diarrhea mostly after meal, or repeated seizure, in varying severities, loose stool or in watery shape, with milk curd or undigested food.

Minor symptoms: Low spirit, poor appetite, lustrousless complexion, slight pale tongue, thin and greasy tongue coating, weak and forceless pulse.

### 1.2 Inclusion criteria

In conformity with the above diagnostic criteria in both Chinese and Western medicine and TCM pattern identification; able to accept the treatment by infantile tuina; no skin lesion in the areas for applying treatment;

at the age of 3 months to 3 years old, no limitation of genders; under the permission of the guardian and patient, and informed consent signed by the guardian.

### 1.3 Exclusion criteria

Those not in the conformity with the above diagnostic criteria; those taking medications in 3 d before consultation; those with severe vomiting or dehydration; those complicated with other problems; at the age under 3 months or over 3 years old; and those with infectious diarrhea, including enteritis, dysentery or cholera.

### 1.4 Criteria for exclusion and drop-out

The guardian was not obedient, and the subject was unable to follow the doctor's advice for the treatment; those accepting other relevant therapy for this disease during the treatment; and those who quit.

### 1.5 Criteria of termination

Those having severe adverse reaction; those presenting serious complications during the clinical observation.

If the above situation appears, the trial must be stopped immediately, and the relevant situations must be recorded in details for relevant medical management.

### 1.6 Statistical methods

All data were processed by SPSS 20.0 for statistical management. All data were processed by the normal and homogeneity test of variance. If in the normal distribution and homogeneity of variance, the data were expressed by mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ), and the paired *t*-test was used for comparison within the group, and the grouping *t*-test was used for comparison between the groups. While the normal distribution or homogeneity of variance was not satisfied, the rank sum test was used. The counting data were processed by Chi-square test.  $P < 0.05$  indicated a statistical difference.

### 1.7 General data

Sixty infants with diarrhea due to spleen deficiency were selected from the Clinic of Infantile Tuina of the First Affiliated Hospital of Hunan University of Chinese Medicine from October of 2013 to October of 2014. They were divided into a treatment group and a control group, 30 cases in each group. The gender, age, duration and pathological situation between the two groups were not statistically different (all  $P > 0.05$ ), indicating that the two groups were comparable (Table 1).

Table 1. Comparison of baseline data between the two groups

Group	<i>n</i>	Gender (case)		Average age ( $\bar{x} \pm s$ , month)	Average duration ( $\bar{x} \pm s$ , day)	Situation (case)		
		Male	Female			Mild	Moderate	Severe
Treatment	30	16	14	20.0 $\pm$ 7.9	6.6 $\pm$ 1.5	24	6	0
Control	30	15	15	19.6 $\pm$ 7.9	6.8 $\pm$ 1.5	24	6	0

## 2 Methods

The infants in the two groups were given the routine basic treatment: for dehydration, oral rehydration salts (ORS) was given for rehydration or intravenous rehydration. If necessary, serum electrolytes and blood gas analysis were processed, and proper expectant treatment was given to rectify the acid-base imbalance and electrolyte disorder. During the treatment, all the infants were strictly prohibited to use antidiarrheics and antibiotics. During the treatment, the light and digestible foods were necessary and the routine expectant management was given, if other situations existed.

### 2.1 Treatment group

#### 2.1.1 Traditional infantile tuina

Reinforced Pijing for 300 times (Figure 1), reinforced Dachang for 300 times (Figure 2), Tui-pushed Shangsanguan for 100 times (Figure 3), Mo-rubbed the abdomen for 200 times (Figure 4), and Tui-pushed Shangqijiegu for 30 times (Figure 5).

The treatment was given once a day, 15-20 min per time. Four weeks made a course, totally for a course.



Figure 1. Reinforcing Pijing



Figure 2. Reinforcing Dachang



Figure 3. Tui-pushing Shangsanguan



Figure 4. Mo-rubbing the abdomen



Figure 5. Tui-pushing Shangqijiegu

#### 2.1.2 Nie-pinching the spine manipulation<sup>[4]</sup>

After the infant took a prone position, the medical practitioner sat at the right side of the sick infant, and applied the techniques on the back and low back, by holding the skin with the two thumbs, and pressing with the index finger and middle finger forward, and lifting and grasping the skin forcefully with the three finger to push and twist forward in alternation. From Guiwei, the medical practitioner lifted and pinched the skin along the two side of the Governor Vessel, to Dazhui (GV 14) as one time, repeatedly for 6 times. After 3 times, the medical practitioner pinched the skin for 3 times and lifted up the skin for 1 time, intensifying the stimulation on Back-Shu points including Shenshu (BL 23), Weishu (BL 21), Pishu (BL 20), Ganshu (BL 18), Xinshu (BL 15), Feishu (BL 13), (Figure 6).



Figure 6. Nie-pinching the spine

The treatment was given once a day, 5 min for each time. Four weeks made a course, for a course in total.

## 2.2 Control group

Based upon routine basic treatment, the infants in the control group accepted the same traditional infantile tuina, and the manual techniques and course were as same as those in the treatment group.

## 3 Observation of Therapeutic Effects

### 3.1 Observed items

#### 3.1.1 Global score of spleen deficiency symptoms

The evaluation was processed in accordance with the nature and shape of stool in the infants with diarrhea due to spleen deficiency, frequency of defecation (major symptoms), appetite, abdominal distension after meal, spirit and physical power (minor symptoms). The scores were counted based upon the four grades of normal, mild, moderate and severe situation (Table 2)<sup>[5]</sup>. The tongue, pulse and fingerprint color were not recorded.

Table 2. Judging criteria for grading of pathological situations

	Symptom	Normal (0 point)	Mild (1 point)	Moderate (3 points)	Severe (5 points)
Major	Nature & shape	Normal	Soft or loose stool, unformed	Soft, loose or thin stool	Watery stool
	Frequency	Normal	2-3 times/day	4-5 times/day	>5 times/day
	Loss of appetite	Normal	Loss of appetite, but in same food proportion	Loss of appetite, food proportion decreased by 1/3	Poor appetite or no food ingestion, food proportion decreased by over 2/3
Minor	Low spirit	Normal	Low spirit, tired limbs	Low spirit, tired limbs	Extreme low spirit, weakness in four limbs
	Abdominal bloating	Normal	Slight abdominal bloating, alleviated or disappeared in 30 min	Abdominal bloating, worse in 0.5-1 h	Severe abdominal bloating, not alleviated within 2 h

#### 3.1.2 Determination of urine D-xylose excretory rate

The colorimetry was used to determine the excretory rate of urine D-xylose. After three test tubes were respectively marked with U, S and B, 0.05 mL of 50-time diluted urine was infused into tube U. 0.05 mL standard liquid was infused into tube S. 0.05 mL water was infused into tube B. 5 mL color agent was added into each tube and mixed well. The tubes were bathed in 100 °C water for 4 min and then cooled down in cold water. By spectrophotometer of 554 nm wave length and colorimetry of 10 mm optical path, tube B was adjusted to zero for reading the absorbance of each tube.

Calculation formula: The excretory rate of urine D-xylose within 5 h after oral administration of xylose = Optical density of determination tube (AU) ÷ Optical density of standard tube (AS) × 10 × Dilution ratio × (Total urine volume of 5 h ÷ 100).

### 3.2 Criteria of therapeutic effects<sup>[3]</sup>

Cure: Frequency of defecation and nature and shape of stool in major symptoms were completely normalized. The symptoms of spleen deficiency pattern in minor symptoms basically disappeared. After the treatment, the global score of clinical major and minor symptoms decreased by ≥90%.

Remarkable effect: Frequency of defecation decreased obviously and stool nature and shape were improved. The symptoms of spleen deficiency pattern in minor symptoms were obviously improved. After the treatment, the global score of clinical major and minor symptoms decreased by ≥70% and <90%.

Effect: The improvement in frequency of defecation and nature and shape of stool was not obvious. Basically, there was improvement in the symptoms of spleen deficiency pattern in minor symptoms. After the treatment, the global score of clinical major and minor symptoms decreased by ≥30% and <70%.

Failure: No obvious improvement in frequency of defecation and nature and shape of stool in major symptoms, and basically no improvement in the symptoms of spleen deficiency pattern in minor symptoms. After the treatment, the global score of clinical major and minor symptoms decreased by <30%.

### 3.3 Results

In comparison of the global score in the symptoms of spleen deficiency and the excretory rate of urine D-xylose before the treatment in the infants between the two groups, the differences were not statistically significant (all  $P > 0.05$ ), indicating that the two groups were comparable.

In comparison of the global score in the symptoms of spleen deficiency and the excretory rate of urine D-xylose before and after the treatment in the infants of the same group, the differences were statistically significant (all  $P < 0.01$ ).

After treatment, the differences in the global score in the symptoms of spleen deficiency pattern between the treatment group and control group were statistically significant ( $P < 0.01$ ), indicating that the improvement of spleen deficiency symptoms was better in the treatment group than in the control group (Table 3).

In comparison of the excretory rate of urine D-xylose between the treatment group and control group, the differences were statistically significant ( $P < 0.01$ ),

indicating that the excretory rate of urine D-xylose was increased more significantly in the treatment group than in the control group (Table 4).

The total effective rate was 100% in the treatment group and 90.0% in the control group and the difference between the two groups was statistically significant, indicating that the therapeutic effects were better in the treatment group than in the control group (Table 5).

**Table 3. Comparison in score of spleen deficiency symptoms before and after treatment between the two groups ( $\bar{x} \pm s$ , point)**

Group	<i>n</i>	Before Treatment	After Treatment
Treatment	30	5.89±1.84	1.53±1.07 <sup>1)2)</sup>
Control	30	6.06±1.61	2.70±1.02 <sup>1)</sup>

Note: Intra-group comparison, 1)  $P < 0.01$ , inter-group comparison, 2)  $P < 0.01$

**Table 4. Comparison of the excretory rate of urine D-xylose before and after treatment between the two groups ( $\bar{x} \pm s$ , %)**

Group	<i>n</i>	Before Treatment	After Treatment
Treatment	30	14.87±0.57	19.41±0.38 <sup>1)2)</sup>
Control	30	14.64±0.53	18.44±0.54 <sup>1)</sup>

Note: Intra-group comparison, 1)  $P < 0.01$ , inter-group comparison, 2)  $P < 0.01$

**Table 5. Comparison of therapeutic effects between the two groups (case)**

Group	<i>n</i>	Cure	Remarkable effect	Effect	Failure	Total effective rate (%)
Treatment	30	7	9	14	0	100 <sup>1)</sup>
Control	30	0	6	21	3	90.0

Note: Inter-group comparison, 1)  $P < 0.01$

## 4 Discussion

The meridians involved in Nie-pinching the spine manipulation are mainly the Governor Vessel and Bladder Meridian. The Governor Vessel goes through the spine and back, communicates with the brain upward and connects with the kidney downward for governing yang qi of the whole body. The Bladder Meridian is distributed along the two sides of the Governor Vessel, and Back-Shu points of Zang-fu organs are situated on the Bladder Meridian of the back. Therefore, the Bladder Meridian of the back is closely related to Zang-fu organs<sup>[6]</sup>. The pathological changes of Zang-fu organs can reflect on Back-shu points, and Back-Shu points can also be used to treat the pathological changes of Zang-fu organs. Nie-pinching the spine manipulation applied on the back can regulate Zang-fu organs holistically. In addition to the Back-Shu

points, there are also Jiaji (EX-B 2) points distributed along the two sides of the spine. In the practice of Nie-pinching the spine manipulation, An-pressing and Rou-kneading Jiaji (EX-B 2) points can regulate qi activities and promote the smooth flow of meridian qi through the Bladder Meridian and Governor Vessel, so as to intensify the role in regulating the functions of Zang-fu organs. At the same time, Dazhui (GV 14) is a gathering site of all types of yang. Changqiang (GV 1) and Dazhui (GV 14) belong to the Governor Vessel. An-pressing and Rou-kneading Changqiang (GV 1) and Dazhui (GV 14) can dredge the meridian qi of the Governor Vessel and regulate the intestinal functions. Stimulating the acupoints of the Governor Vessel and Bladder Meridian by pinching up the spine can regulate yin, yang and Zang-fu organs of the whole body, increase and reinforce Yuan-Primary qi, strengthen the spleen and stomach for stopping diarrhea<sup>[7]</sup>.

It is believed in modern theory that as a mechanical stimulation, by its effect on the spinal nerve of the back, Nie-pinching the spine manipulation can stimulate the cerebral cortexes, regulate Zang-fu organs, regulate the functions of the digestive system, and have the gastrointestinal peristalsis transferred from excitement to a relevant balance, so as to realize the effect to stop diarrhea. It has been proven by modern medicine that the spine is a core power of the human skeleton and is the pathway of the nerve root from the brain and spinal cord for controlling various organs and tissues. Moreover, the major automatic ganglions and nerve trunks of the human body all gather along the spinal column. Depending upon the complicated nerves and humeral factors, Nie-pinching the spine manipulation directly works on the automatic ganglions and nerve trunks, to realize the goals to comprehensively and bilaterally regulate the functions of the internal organs for expelling illness and strengthening body health<sup>[8]</sup>.

Plasma motilin (MOT), or motion hormone, is an objective and specific index to judge spleen deficiency pattern<sup>[9]</sup>. MOT is a brain-gut peptide and can regulate the motility of the stomach and intestines. It gathers in great volume in the gastrointestinal mucous membrane, and exists in the peripheral and central nervous tissues, mainly influencing the motility of the stomach and intestines. It has been found out in the study of applying Nie-pinching the spine manipulation on the rabbits with spleen deficiency, the contents of plasma MOT could be reduced, so as to improve the gastrointestinal functions of the rabbit for realizing the therapeutic role<sup>[10]</sup>.

An experimental study found out that Nie-pinching the spine manipulation could remarkably enhance the contents of plasma D-xylose in the rabbits of spleen qi deficiency, alleviate the symptoms of spleen qi deficiency, increase the body mass of rabbits, indicating that Nie-pinching the spine manipulation could strengthen the functions of the spleen and stomach in the rabbits of spleen qi deficiency, improve appetite, intensify the intestines in digesting and absorbing the substances beneficial to the human body<sup>[11]</sup>.

Nie-pinching the spine manipulation can promote the increase of hemoglobin and plasma proteins, intensify the phagocytic ability of white blood cells and the values of serum complement, so as to play the anti-inflammatory and anti-diarrheal role. Nie-pinching the spine manipulation can elevate hemoglobin, plasma proteins and serum amylase index in the infants with diarrhea, and enhance the absorbing ability of the small intestine<sup>[12-15]</sup>. At the same time, Nie-pinching the spine manipulation can enhance the immune ability of the infants and intensify the defending ability of the intestine against the outside world<sup>[16-18]</sup>.

It has been verified by this clinical observation that traditional infantile tuina plus Nie-pinching the spine manipulation can greatly regulate the gastrointestinal function and intensify the anti-diarrheal effect for the infants with diarrhea due to spleen deficiency, and is an organic and healthy therapy and needs to be clinically popularized. Due to time limitation, only short-term effects were observed. The further observation and study are needed for long-term effects and best course. At the same time, only infantile diarrhea due to spleen deficiency is selected in this clinical study. Whether Nie-pinching the spine manipulation is effective for other patterns needs our further observation and textual research. The exact functional mechanism of Nie-pinching the spine manipulation also needs further and intensive study.

#### Conflict of Interest

The authors declared that there was no potential conflict of interest in this article.

#### Statement of Informed Consent

Informed consent was obtained from the guardians of the recruited children in this study.

Received: 18 January 2016/Accepted: 26 February 2016

#### References

- [1] Hu YM, Jiang ZF. Zhu Futang Textbook of Pediatrics. 7th Edition. Beijing: People's Medical Publishing House, 2002: 1286.
- [2] Wang SC. Pediatrics of Traditional Chinese Medicine. Beijing: China Press of Traditional Chinese Medicine, 2005: 103.
- [3] State Administration of Traditional Chinese Medicine. Criteria of Diagnosis and Therapeutic Effects of Diseases and Syndromes in Traditional Chinese Medicine. Nanjing: Nanjing University Press, 1994: 227.
- [4] She JH. Infantile Tuina. Beijing: People's Medical Publishing House, 2010.
- [5] Bureau of Drug Administration of the Ministry of Public Health, China. Guiding principle for clinical study on treatment of spleen deficiency pattern by Chinese medicine. Acta Medica Sinica, 1988, 3(5): 72.
- [6] Ge WG. A talk on application of four steps of tuina therapy for infantile diarrhea. Anmo Yu Daoyin, 2007, 23(1): 42.
- [7] Song Y. Acupuncture on Sifeng (EX-UE 10) plus Nie-pinching the spine manipulation for 55 cases of infantile diarrhea. Jilin Zhongyiyao, 2007, 21(3): 38.
- [8] Deng YP, Qi Z, Wan Q. Clinical study on Chinese medicine plus Nie-pinching the spine manipulation for infants with repeated respiratory infection. Liaoning Zhongyi Zazhi, 2007, 34(1): 56-57.
- [9] Liu F, Ren P, Li YC, Huang X, Feng JH, Zhang L, Ma LL. Study on relationship between spleen deficiency pattern and MOT. Zhongyiyao Xuekan, 2004, 22(11): 2029-2031.

- [10] Li TL, Zhao F, Zhang H, Yuan YQ, Wang HH, Chen R. The effect of chiropractic therapy on serum motilin of spleen deficiency syndrome rabbits. *Yixue Yanjiu Zazhi*, 2010, 39(2): 87-89.
- [11] Li TL, Wang HH, Yuan YQ, Zhang H, Zhao F, Chen R. Effect of chiropractic therapy on serum D-xylose of spleen qi deficiency syndrome in rabbits. *Hunan Zhongyiyao Daxue Xuebao*, 2009, 29(6): 33-35.
- [12] Pan X, Cui ZJ. Experience on auxiliary treatment of infantile diarrhea in autumn by Nie-pinching the spine manipulation. *Chin J of Clinical Rational Drug Use*, 2011, 4(10B): 16.
- [13] Wang LQ, Ge JL. Study on immune and intestinal microecological mechanism in treatment of infantile fever by Nie-pinching the spine manipulation. *Henan Zhongyi*, 2007, 27(10): 25-26.
- [14] Ye K. Observation on clinical effects of tuina plus hot compress for infantile diarrhea due to spleen-kidney yang deficiency. *J Acupunct Tuina Sci*, 2014, 12(3): 186-189.
- [15] Li XT, Wang B, Mou HQ. Treating children diarrhea by massage. *Zhongguo Linchuang Yanjiu*, 2013, 5(8): 47-48.
- [16] Chen ZW, Shen YJ, Wang Q. Summary of professor Jin Yi-cheng's academic thoughts on pediatric tuina therapy. *J Acupunct Tuina Sci*, 2015, 13(2): 83-92.
- [17] Jiang LL, Liu YC, Li XC, Wang H. Investigation on mechanism and characteristics of chiropractic therapy. *CJTCMP*, 2015, 30(8): 2852-2856.
- [18] Li H, Chen P, Zhang BY, Luo JJ, Jiang XQ, Gu PH. Research in the evaluation of the role of the chiropractic therapy in the community child health care. *Shanghai Yiyao*, 2015, 36(14): 60-62.

**Translator:** Huang Guo-qi (黄国琪)