

Kampo Medicine - Current Research

Children's Emotions and Kampo

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Introduction

In response to the changing social environment of children in recent years, the likelihood of dealing with emotional problems in pediatric care has been increasing. In particular the concept of "neurodevelopmental disorders" has been popularized and accordingly the relative interest in this field has been increasing. With some exceptions the pharmacotherapy for children with emotional problems is not supported by sufficient evidence, side effects cause problems and the general physician may have difficulties to use the relevant drugs. On the other hand, Kampo medicines have a long history of experience based clinical application for emotional problems. Naturally, as viewed from the context of EBM they are subject of debate, but they are nevertheless considered to have the qualities of one possible choice of pharmacotherapy.

In the present paper I would like to outline the use of Kampo medicines for emotional problems in children in a way easily comprehensible even for physicians not familiar with Kampo.

I. How were children viewed in ancient Chinese medicine?

In traditional Chinese medicine there are a number of expressions describing the characteristics of children, but probably the most important among these is: "two excesses (heart, liver), three deficiencies (lung, spleen, kidneys). A modern interpretation of this expression would be, that in case of excesses in heart and liver easy development of fever, convulsions, disturbances of consciousness and other neurological symptoms are observed, other manifestations include easy mental excitation or instability, while deficiencies of lung and spleen may result in hypoactivity of the still immature respiratory and digestive functions and the

deficiencies related to the kidneys could easily manifest as developmental disorders. This is not much different from our modern understanding of the characteristics of developing children. Kampo medicines that have been used for children can historically be classified according to these characteristics (Table 1). In this paper I will select among these specifically Kampo medicines related to emotional problems. In other words, I would like to consider Kampo medicines with emotional stabilizing effects. Regarding other effects I would like to ask the reader to refer to the references¹⁾.

1	Easy development of fever, resulting in convulsions, disturbances of consciousness → Kampo medicines with immune function regulating actions for infections
2	Getting easily agitated, mentally unstable → Kampo medicines with emotionally stabilizing effects
3	Immature digestive function easily leads to weakened function → Kampo medicines with digestive function improving actions
4	Immature respiratory function easily leads to weakened function → Kampo medicines with antitussive actions
5	Easy occurrence of developmental disorders, weak vital energy → Kampo medicines that support development
6	Addition → Kampo medicines with water metabolism regulating actions

II. Emotionally stabilizing effects of Kampo medicines

Kampo medicines are composed of multiple crude drugs (simply processed roots, stems, fruits of plants, minerals, small animal products) combined depending on the therapeutic purpose. Currently, Kampo medicines in Japan are mostly used in the form of extract preparations, the basic composition of which has already been indicated 2,000 years ago.

Details of the process of the establishment of these drugs are unknown, but probably man used his primitive senses for the initial choice of the crude

drug, after that millennia of clinical experience (occasional human experimentation) accumulated and thus presumably led to the development of these Kampo medicines.

Kampo medicines as drugs are characterized in being compositions having multiple therapeutic effects. These sets of multiple therapeutic effects precisely are the characteristic of Kampo medicines. In humans multiple functional systems are mutually interrelated. If the characteristics of Kampo medicines adequately match any disturbances of these human functional systems, it will presumably allow adjustment of the entire body.

Yokukansan will be considered as a representative example of a Kampo medicine with emotional stabilizing effects. As shown in Figure 1 *yokukansan* is composed of the seven crude drugs *Uncariae Uncis Cum Ramulus*, *Bupleurium Radix*, *Angelicae Acutilobae Radix*, *Cnidii Rhizoma*, *Poria Atractylodis Rhizoma* and roasted *Glycyrrhizae Radix*. Today it is used either as a decoction as shown in Figure 2 or else an extract preparation as shown in Figure 3. In general almost always the more practical extract preparation is used.

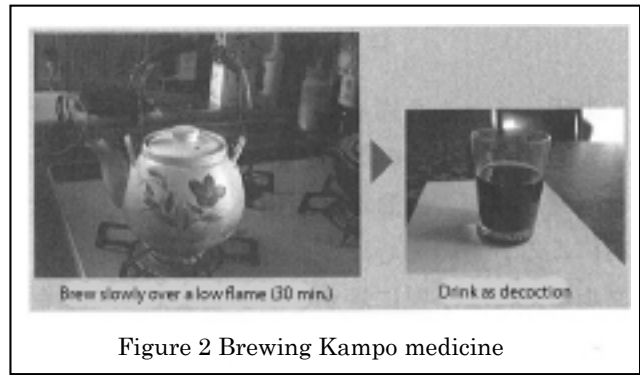


Figure 2 Brewing Kampo medicine

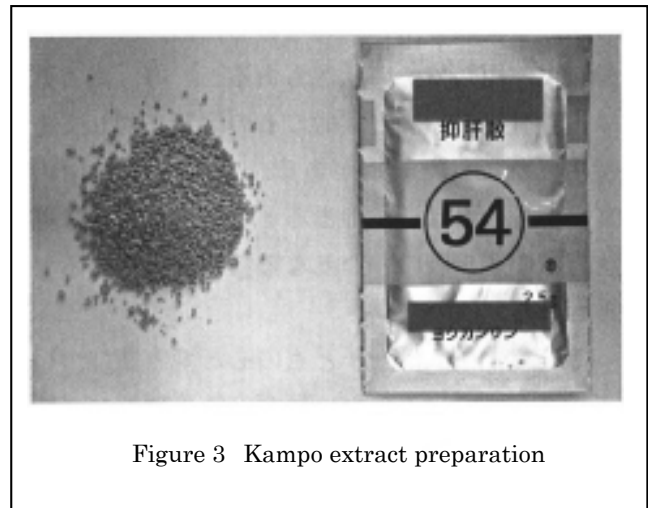


Figure 3 Kampo extract preparation

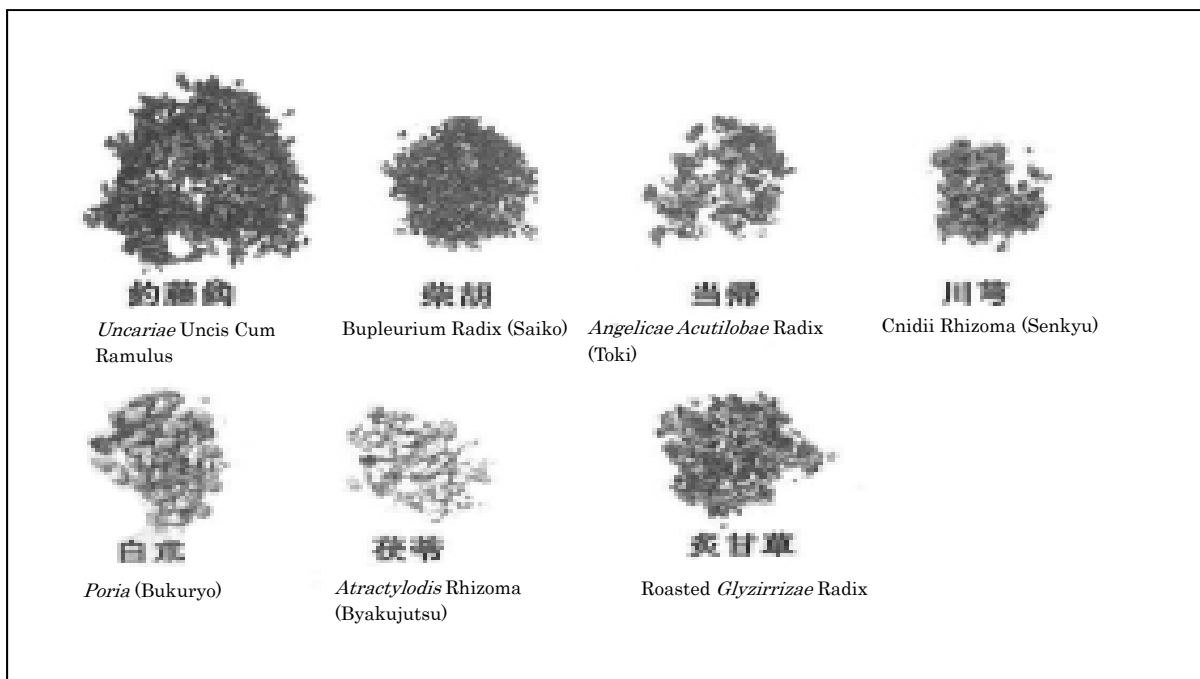


Figure 1 The constituent crude drugs of *yokukansan*

Table 2 shows Chinese crude drugs generally thought to have emotionally stabilizing effects. I will omit the details, but the important thing here is, that related to the emotions items with violent actions have been excluded, concentrating on invigorating and suppressing effects (not necessarily precise), because each of the crude drugs has apart from the emotionally stabilizing effects also various other effects on the body. Examining *yakukansan* from this point of view (Table 3), it contains many emotionally stabilizing drugs centering around the classical anticonvulsant *uncaria* indicated by underlining and while the main purpose is clearly emotional stabilization (sedation), other secondary effects include improvement of digestive function, regulation of hydration, improvement of the microcirculation.

<i>Perillae</i> Herba	<i>Glycyrrhizae</i> Radix
<i>Menthae</i> Herba	<i>Jiziphi</i> Semen
<i>Chrysanthemi</i> Flos	<i>Nelumbis</i> semen
<i>Purnellae</i> Spica	<i>Polygalae</i> Radix
<i>Gardeniae</i> Fructus	<i>Longan</i> Arillus
<i>Coptidis</i> Rhizoma	<i>Ostreae</i> Testa
<i>Poria</i>	<i>Tritici</i> Fructus
<i>Magnoliae</i> Cortex	<i>Ostreae</i> Testa
<i>Evodiae</i> Fructus	<i>Saigae tataricae</i> Cornu
<i>Cyperis</i> Rhizoma	<i>Gastrodia</i> Tuber
<i>Curcumae</i> Rhizoma	<i>Uncariae</i> Uncis Cum Ramulus
<i>Saussuerae</i> Radix	<i>Bombyx</i> Batryticatus
<i>Cnidii</i> Rhizoma	<i>Gentianae Scabrae</i> Radix
<i>Salviae Miltiorrhizae</i> Radix	<i>Cicadae</i> Periostracum
<i>Rehmanniae</i> Radix	Visci Herb
<i>Ginseng</i> Radix	<i>Pinellia</i> Tuber
<i>Ziziphi</i> Fructus	<i>Arisaematis</i> Rhizoma

<i>Uncariae</i> Uncis Cum Ramulus.....anticonvulsive, emotionally stabilizing (sedation)
<i>Bupleurium</i> Radix.....antifebrile, emotionally stabilizing, upraising
<i>Angelica Acutilobae</i> Radix.....improving microcirculation, laxation
<i>Cnidii</i> Rhizoma.....improving microcirculation, analgesic, emotionally stabilizing
<i>Atractylodis</i> Rhizoma.....adjusting water metabolism, improvement of digestive function
<i>Poria</i>adjusting water metabolism, improvement of digestive function, emotionally stabilizing
Roasted <i>Glycyrrhizae</i> Radix.....improvement of digestive function, muscle relaxation, mitigating drug properties
Generalized effects.....anticonvulsive, emotionally stabilizing, improvement of digestive function, adjusting water metabolism, improving microcirculation
(The originally anticonvulsive preparations can today be expected to have emotionally stabilizing actions)

III. Mental and psychological disease patterns from the traditional Chinese medical perspective

Table 4 summarizes the deficiency and excess aspects of mental and psychological disease patterns according to the traditional Chinese medical visceral organ-function system as described in a book on Chinese medicine^{2),3)}. Due to the large number of technical terms I will omit a detailed explanation, but the important point here is, that mental and psychological disease patterns are viewed as equal to physical patterns. Based on a comprehension of their mutual correlation among these in particular the heart, liver and gallbladder organ-function systems are closely related and Table 5 shows their disease patterns.

IV. Categorization and cases for simple explanations

The unfolding of this kind of theoretical and technical discussion is generally extremely difficult to understand. Moreover, the classifications of these disease patterns have since ancient times been refined by experience through long use of Kampo medicines, so that the classification of disease names differs from modern Western medical views, representing so to speak a cross-section of Western medical disease names.

Five viscera	Deficiency (scarcity)	Excess (surplus; stagnation)
Lung	Lung Qi deficiency	
Heart	Heart Qi deficiency (fearfulness), Blood (Yin) deficiency	Heart fire, phlegm-heat
Spleen	Spleen Qi deficiency	
Liver	Liver Blood (Yin) deficiency	Stagnation and sluggishness of hepatic Qi, liver fire, managing gloom
(Gallbladder)	Gallbladder Qi deficiency (fearfulness)	Gallbladder fire, stagnant heat
Kidney	Kidney essence deficiency	

Reference: Differential Diagnosis of Chinese Medical Symptoms, 2nd Edition²⁾

Heart: maintain sound consciousness, thinking Functional disorder→anxiety, fright, insomnia, excessive dreaming, irritability, irascibility
Liver: promote the flow of Qi and development Functional disorder→prevents unconstrained development, depressive feeling, irritability, irascibility, violent mood swings
Gallbladder: controls will and decision making Functional disorder→ perplexity, fear

Accordingly, in this manuscript I will follow the above mentioned traditional medical concepts as far as possible, but at the same time tried to explain matters using the classification shown in Table 6 in order to facilitate the use of Kampo medicines through simplification. In other words, three common sense categories are set up centering on the therapists view regarding "how should the therapy be aimed at the patient's symptoms". Kampo medicines belonging to each of these categories are shown and the Kampo therapy outlined with case studies.

This classification is not a standard Kampo method, but considered to be useful for providing simple explanations. So please bear with me taking the liberty of adopting this everyday language classification.

Category 1 [Key words] All right, don't be afraid, at ease [Symptoms] No confidence, worrying temperament, apprehensive, nervous and other similar emotions continue – related to the heart and gallbladder [Formulas] <i>kanbakutaisoto</i> , <i>kamikihito</i> , <i>saikokaryukotsuboreito</i> , <i>sanstoninto</i> etc.
Category 2 [Key words] Don't huddle up, develop unconstrained [Symptoms] High tension, depressive, irritability, easy mood swings – related to the liver [Formulas] <i>shigyakusan</i> , <i>saibokuto</i> , <i>kamishoyosan</i> , <i>kososan</i> , <i>saikosokansan</i> etc.
Category 3 [Key words] Relax, take it easy [Symptoms] Irritability, depressive, restless etc., mainly mild excitement related symptoms—heart, liver, gallbladder related [Formulas] <i>yokukansan</i> , <i>yokukansankahangechinpi</i> , <i>daisaikoto</i> , <i>orengedokuto</i> , <i>chikujountanto</i> , <i>tokakujokito</i> etc.

1. A category 1 case

Case No. 1

3-year old boy, pavor nocturnus

The boy entered kindergarten in April. From the middle of the same month onward he would suddenly wake up during the night and vehemently

weep and cry, exhibiting a behavior marked by running around once or twice a week. Since May this happened every night and troubled the family, so that they brought him on the 11th of the same month (after the condition continued for one month) to this clinic. He seemed to be a little downcast. General condition was good.

I diagnosed the condition as pavor nocturnus and considered possible adaptation problems in kindergarten, contacted it and gave instructions pertaining to acceptance at home. However, since the condition had continued until the next clinic visit a week later, I judged the condition be marked by fright and anxiety (category 1) and started the child on a twice a day prescription of *kanbakutaisoto* (Gan Mai Da Zao Tang). The symptoms disappeared almost completely immediately after taking the medicine.

Kanbakutaisoto is comprised of *Glycyrrhizae Radix*, *Triticum Fructus* and *Ziziphi Fructus* used as a sweeteners and thus is a simple formula that can almost be called a foodstuff. It is easy to take and widely used among both children and adults.

Case No. 2

14-year old girl, junior high school third grade, nervous pollakiuria

From June 20xx pollakisuria and a feeling of residual urine developed, but examinations performed in this clinic ruled out organic diseases, leading to the suspicion of the involvement of psychological factors. During the summer holidays the symptoms decreased slightly but the girl had pollakisuria while in boarding school. Due to an aggravation of symptoms in September I invited her by the end of the same month to the Kampo outpatient service. Until then I prescribed the patient Tofranil, but because it caused drowsiness, she could not take the drug and *choreito* was ineffective. The frequency of 12-13 micturitions while in school and 7-8 times more after returning home irritated her and she complained of being

easily startled. She avoided school related topics. Her late grandmother reportedly suffered from depression and frequently complained of pollakisuria.

Initially I thought, the condition was due to excessive tension, inhibiting normal development (category 2) and prescribed *saikosokanto* decoction (feel relieved). Yet, two weeks later there were no changes at all and the girl appeared during the second consultation to have lost confidence and clearly made an apprehensive impression (category 1). Therefore I switched the prescription to *sansonintokagen* decoction (don't fear, everything will be fine).

Two weeks later the micturition frequency decrease by half and she seemed to be more composed. One month later she almost did not need to go to the bathroom during classes and the feeling of residual urine disappeared. A mild degree of pollakisuria persisted. She complained about worries pertaining to entrance examinations. In January of the following year the pollakisuria grew worse due to the cold weather, so that I added cinnamon bark and *Aconiti Radix Processa* (warming components) and achieved alleviation. In February she passed the senior high school entrance examination, the pollakisuria disappeared and since she had calmed down, the drug administration was discontinued. After that the patient did not visit the clinic.

2. Category 2 cases

Case No. 1

14-year old girl, junior high school student, general lassitude, sensitivity to cold

She has an anamnesis of atopic dermatitis, bronchial asthma. One month ago she indulged in excessive eating of eggs and chocolate, resulting in the development of generalized urticaria and she was hospitalized for a short period due to aggravation of the AD. During the height of the summer on August 15 she visited the clinic complaining of generalized lassitude and chills. She reported being tired since about one month ago and

since about 2 weeks ago she felt cold like being attached to a cooler. Since before she had already had conflicts with her mother and on this occasion there was trouble too. Physically, apart from a minor degree of AD, no abnormal findings were observed.

Simultaneously with the generalized lassitude and sensitivity to cold she felt hot in the chest and complained about getting irritated. Her pulse was wiry and the abdominal muscles were tense. Based on the course and findings I thought stress had induced excessive tension and caused a mild degree of microcirculatory disorder (category 2).

I used *shigyakusan* extract (to release psychosomatic tension and facilitate an unrestrained development). After four days of medication the generalized lassitude was relieved, but the sensitivity to cold remained unchanged. After 10 days of medication the generalized lassitude, sensitivity to cold and chilliness of hands and feet had disappeared. After 15 days of medication she appeared to be very healthy and I discontinued the medication. This is a typical category 2 case.

Case No. 2

10-year old boy, elementary school student, psychogenic cough (vocal tic)

The parents divorced during his infancy and he lives now mainly with the father's side grandparents. There is no obvious history of asthma and no problem with school attendance. Approximately two months ago a persisting cough developed for which he commuted to several clinics. He was treated with antitussives, expectorants and macrolides, but since these did not produce any relief, he was introduced to this clinic in November 20XX and came with his grandmother for consultation. Examination did not reveal any anomalies. The cough was dry and he frequently cleared his throat. There was no cough during sleep. There was discomfort in the throat and he felt suffocated in enclosed spaces. He is timid and becomes easily tense. Recently he seemed to be anxious. During his outpatient visits he frequently

cleared his throat with a dry cough. Physical examination and general laboratory tests did not reveal any anomalies. I suspected maladjustment to school conditions and diagnosed psychogenic cough (vocal tic).

I explained to the grandmother the involvement of psychogenic factors and chose to observe the course with only an antitussive over a period of two weeks. The cough itself slightly improved, but since his clearing of his throat worsened, I added *saibokuto* extract. Following the begin of the medication the cough and clearing of his throat markedly decreased, and the anxious impression abated. Since the symptoms had almost completely be alleviated 4 weeks later, the treatment was discontinued after 8 weeks. After that he occasionally took medicine on his own will, but commuted lively to school. From the Kampo medical perspective the Qi flow was considered to have stagnated in this case and thus prevented unrestrained development, manifesting in respiratory symptoms (category 2). Based on the outcome the use of *saibokuto* (*shosaikoto* + *hangekobokuto*) extract was considered to have been effective.

3. Category 3 cases

Case No. 1

3-year old girl, atopic dermatitis (AD)

Six months after birth eczema and at the age of 2 years AD was diagnosed. Eight months ago the conditions worsened, the girl was taken to four different clinics and a pharmacy consulted, but because of insufficient relief in spite of the administered medication, she was brought to this clinic. She complained of itching after trouble with friends in kindergarten. She is always very nervous. There is also night crying. She was calm at the time of consultation, but throughout asked her mother to scratch her (almost all of which was more like gentle stroking). The symptoms had aggravated after her younger sister was born. The eczema had developed

only on the neck and the extremities. I surmised the symptoms to be a manifestation of separation anxiety.

In Kampo terms the patient was diagnosed as category 3 and *yokukansan* extract prescribed, expecting it would relief the complaints. Two weeks later the patient was markedly calmer and after 4 weeks the scratching frequency and intensity had decreased to 1/3 of the original level. After 4 months the scratching behavior had disappeared and the medication was discontinued. Later however the scratching behavior exacerbated, so that medication was restarted, resulting again in relief and subsequently continued over a period of one year.

Case No. 2

5-year old boy, extensive developmental disorder

At the age of 3 years he was diagnosed with autism and started to commute to specialized facility. Because of a marked communication disorder, delayed speech development and hyperactivity and impulsive behavior at home, he was brought to this clinic requesting Kampo treatment. During the outpatient visit he avoided my gaze, ignored the environment and wandered restlessly around. I diagnosed category 3 and prescribed a decoction centering mainly on the formula *yokukansan*, expecting a tranquillizing effect. Two weeks after the begin of the medication some changes were observed and four weeks later the hyperactivity and impulsive behavior had been alleviated so much as to astonish the facility he commuted to. The administration was continued over a period of 3 months, but after that discontinued, because he moved far away.

4. When two categories are mixed

Case No. 1

6-year old boy, elementary school first grade, attention deficit hyperactivity disorder

During infancy he was a restless, easily angered child, but during kindergarten this did not cause much problems. After school started there were

violent mood swings and his behavior was conspicuously marked by kicking his desk even during classes, when he did not like things and storming out of the classroom. Following recommendation by the class teacher he visited this clinic during summer holidays.

He was fidgety, irascible, showed impulsive behavior, was disorganized, but also gentle and cried easily. Pavor nocturnus: once/month, ADHD checklist: 13/17 (standard 6/17), predominantly hyperactive and impulsive, high-functioning autism, Asperger checklist: below standard value, psychosomatic checklist: below standard value, WISC: normal.

Based on the above described findings I diagnosed an attention deficit hyperactivity disorder. From a Kampo medical point of view the probability of a category 3 disorder was high, but an involvement of category 1 also conceivable. Therefore I prescribed *yokukansan* extract for 2 weeks, expecting to obtain some sedative effect. After two weeks some improvement had been achieved, so that I added *kanbakutaisoto* and another two weeks later the patient had calmed down. In school too the impulsive behavior had decreased as compared to the first term. The class teacher said: "During the second term he could almost follow the class schedule. The problem has been markedly reduced." At home the impulsive behavior decreased from a level of 10 to 3. He himself said: "Taking the medicine makes things easier" and took it voluntarily. The medication was continued for about three years and after that gradually tapered off.

Although this may deviate slightly from the point of this argument, in Table 7 I show some case series studies pertaining to Kampo treatment for neurodevelopmental disorders that in recent years have become a problem in the fields of pediatrics and psychiatry.

Table 7 Reports pertaining to the correlation between pediatric developmental disorders and Kampo treatment

(Case series studies)

• Autism: *daisaikoto, yokukansankahangechinpi, shigyakusan*

Iida (2004) – 30 cases⁴; marked improvement of tension related symptoms

• Generalized developmental disorders:

17 formulas, Kawashima (2007) – 53 cases⁵

49% improvement of mental symptoms, *yokukansan, yokukansankahangechinpi, kanbakutaisoto* has a high efficacy rate, markedly improved hyperactivity, behavior disorders, panic disorders

• Pediatric mental disorders (mainly developmental disorders): *yokukansankahangechinpi,*

Ujiie (2010) – 73 cases⁶, efficacy 81%. Improvement of irritability, rage and similar emotional behavior disorders

5. Kampo medicines used for other purposes can also expected to have emotionally stabilizing effects

Case No. 1

6-year old girl, psychogenic abdominal pain

The girl had a history of night crying and recurrent fever and ate very little.

She had the habit of having bowel movements after returning home from the kindergarten. After school started she could not return home by her accustomed bowel movement time and thus held the urge back. She tried to have bowel movements in the morning, but from the middle of May complained of abdominal pain and began to go to the bathroom 2 to 4 times. She did not attend school for about 3 days, but after that required her mother to accompany her on her way to school and the night crying recurred too. For this reason she visited this department in the middle of June. She was diagnosed with psychogenic abdominal pain and in Kampo medical terms her condition was considered to be due to disharmony of liver and stomach (stress induced tension that decreased digestive function). I used *shokenchuto* extract to relieve muscle tension and improve digestive function.

After one week of medication the abdominal pain, frequent defecation behavior and night crying had stopped and after two weeks she started to dislike being accompanied, so that her mother stopped accompanying her. She could now commute normally to school. After that there was no abdominal pain any longer. The medication was discontinued after 4 months. (both the mother and the class teacher had the following impression: although she had been so quiet as to cause concern, after the treatment began, she suddenly became much livelier and played with the boys).

Shokenchuto is a Kampo formula used in case of low strength and easy fatigability. In particular in children it warms the body and relieves excessive tension of the digestive tract and is therefore used to improve digestive functions. It is frequently used, like in the present case, for troubles with digestive functions and of its components only jujube fruit (Taiso) is a crude drug with emotionally stabilizing effects, but it relieves generalized tension and helps to bring ataractic actions about. This formula is easy to take and widely used in children (Table 8).

Table 8 *Shokenchuto* Source: "Shang Han Lun / Jin Gui Yao Lue"

• Cinnamon twig: warms the body, induces mild sweating
 • Peony root: relieves muscle tension, improves microcirculation
 • Jujube fruit: improves digestive function, stabilizes emotions
 • Ginger root: warms the body, improves digestive function
 • Roasted Glycyrrhiza: improves digestive function, relieves muscle tension, mitigates drug effects
 • Malt sugar: supplementing nourishment, antitussive
 Effects: improves digestive function, relieves muscle tension, stabilizes emotions

Mental problems in children can not always be fitted neatly into categories, but those are still considered have a certain degree of real meaning regarding the selection of appropriate Kampo medicines. That is why I have listed them here. Moreover, several of the Kampo medicines included

in these categories have characteristic medicinal effects, but because of limited space will not be detailed here. I would like to refer the reader to the reference works for further details.

This may be a little digression, but the most important Kampo classic "Shan Han Lun" is an excellent guideline for the treatment of acute infections. The crude drugs and Kampo medicines described therein are still today used for a variety of conditions and are considered to have various natural immune function adjusting actions (anti-inflammatory actions). On the other hand, recently various psychophysiological and neuritic conditions have been receiving much attention^{7),8)}. Currently the mechanisms underlying the emotionally stabilizing effects of Kampo medicines are still obscure, but their "anti-inflammatory" actions may be one possible hint.

V. Characteristics of Kampo treatment

Naturally, expecting emotionally stabilizing action from Kampo treatment has both merits and demerits.

A merit is, that in conjunction with an emotional stabilization physical (mainly digestive function) functions can be expected to improve, the treatment is mild, it does not induce drowsiness, cause loss of appetite, dryness of the mouth or other side effects. Again, although this is not much discussed and apart from the degree of their efficacy, these formulas can be used without much reservation for patients with various mental problems. In this respect they meet the expectations of both patients and their families, allowing to link to the subsequent development.

A demerit is, that in cases of domestic violence etc., requiring a fast sedation, that kind of powerful action can not be expected. Taste may also be a problem, requiring some ingenious measures to facilitate the administration and finally, there are almost no reports presenting highly reliable evidence.

VI. Dose

Regarding the dose of Kampo extract preparations for children generally Von Harrnak's calculation based on body surface and body weight is used, but depending on the individual condition it may be necessary to increase this dose, so that those values should be regarded as estimates.

Note that the dose for adults may also vary depending on the manufacturing pharmaceutical company or the type of administered drug. Basically drugs are taken divided into three portions per day, but it is also possible to use two portions. In principle they should be taken before meals, but there is not really any major difference when taking them after meals⁹⁾.

Conclusion

In this article I tried to explain as simple as possible the fundamental properties of Kampo medicines in relation to psychiatric problems in children. Naturally, there are limits to the treatment with Kampo medicines, but using their property of being compounds to complement Western medicine, I believe we can extend the pharmacological therapy of psychiatric problems in children still further.

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