

## Front Line of Kampo Medicine

*Review 1 of Academic Meeting Concerning  
Pharmaceutical Sciences*

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This series introduce the latest studies on Kampo medicines presented at the Society's meetings.

The first installment of the series will provide the studies presented at The 130th Annual Meeting of Pharmaceutical Society of Japan held in Okayama in March, 2010.

Kamakura et al. of National Institute of Health Sciences reported that their analysis of heavy metals contained in the products on the crude drug market showed high levels of cadmium in coptis rhizome, gardenia fruit, zedoary, and some specimens of atracylodes lancea rhizom, whereas low levels of arsenic, mercury, and lead were detected.

Nakamura et al. of Osaka University reported that they had made gene analysis, metabolomic analysis, and elemental analysis using ICP-MS for 50 horticultural varieties of peonies, 16 specimens of peonies as crude drugs distributed in Japan, and red peonies produced in China, and conducted multivariate analysis of individual factors; and as a result of all types of analysis, it is now possible to classify the various varieties of Chinese peonies into the group of white peonies or the group of red peonies and even their production areas.

Kitaoka et al. of Kanazawa University reported that their DNA analysis of the plants belonging to *Angelica* genus and the on-market products of the crude drug "*Angelicae Radix*" clarified that the base sequences of three species of *Angelica acutiloba*, *A. gigas*, and *A. sinensis* in the ITS region were different each other, enabling the

botanical origin of the crude drug "Japanese angelica root" to be identified from the gene. And the Kodaira et al. of Kanazawa University reported on the crude drug "*Poria Sclerotium*." They made a comparison between the on-market product produced in China and the one produced in Japan and found differences in not only production characteristics but also DNA base sequence.

Asahina et al. of Ochanomizu University reported that as a result of their chemotaxonomic analysis of the original plant of *Dendrobium* using LC/MS, it was possible to distinguish the botanical origin *Dendrobium moniliforme* from *D. tosaense*. They also reported that the use of chloroplast genes allowed differentiation between six species of the genus *Dendrobium*.

Yamazaki et al of Osaka Prefectural Institute of Public Health reported that in conducting HPLC analysis of ginsenoside Rb<sub>1</sub> contained in Kampo preparations, they developed a simple and quick analytical method through the use of the polymer-based HILIC column.

Morinaga et al. of Nagasaki International University reported that they developed a method of qualitatively analyzing baicalin in the following procedure: Kampo medicines containing scutellaria root baicalensis Georgi are put on the polyethersulfone (PMS) membrane and then membrane chromatography is performed. Or, the specimen of *Scutellariae Radix* was pushed onto the membrane in order to transfer all the ingredients into the membrane. After that, the membranes were stained with monoclonal antibodies against baicalin.

Studies on problems arising from preparing Kampo medicines

Hakamazuka et al. of National Institute of Health Sciences reported that they had made a comparison of the total amount of extracts obtained from separate decoctions of individual crude drugs composing a Kampo prescription to the amount of the extract obtained from the decoction of a mixture of crude drugs. They found that in 15 prescriptions and their composing 38 crude drugs, the total amounts of individual decoctions and the one-time decoction of all crude drugs were similar, except for the case of *orengedokuto* (*Coptis Detoxifying Decoction*), in which the total amount of individual decoctions was 70-80% of that of the one-time decoction.

Hirasawa et al. of Kanazawa University reported on quality changes of the decocted liquid of *kakkonto* (*Pueraria Decoction*). They prepared the decocted liquid using the automatic Kampo extract packing machine and stored it at 4, 25, and 40 C degrees for 3 weeks to examine changes in quality. At 40 C, the yellow tint was reduced with an increase in redness. As a whole, the color was turning to darkening with an increase in bitterness and a decrease in tart. On the other hand, no changes were observed at 4 C and 25 C, which suggests that the quality can be preserved for three weeks if decoctions are stored in a cool place or at ambient temperature.

Fukuda et al. of Josai University reported that they had examined acidity of the steam when decocting *maoto* (*Ephedra Decoction*) and *shoseiryuto* (*Minor Blue Dragon Decoction*) with the results that in *Shoseiryuto*, the degree of unpleasantness was high while an improvement in a sense of blockage in the nose and the eyes feeling refreshed were significantly better compared to *Maoto*.

Nakamura et al. of Hokkaido University of Education reported that they had examined influence of radiation exposure for sterilization

purposes on Kampo extract preparations and reached proper amounts of radiation and exposure time.

Koyama et al. of Tochimototenkaido reported that they had carried out a testing on migration of residual pesticides remaining on the crude drugs "perilla herb" and "citrus unshiu peel" to decoction liquids, with the results that there were no migrations except for azoxystrobin at a very low level.

Basic pharmacological study for Kampo medicines

Asahina et al. of Toho University reported that they administered *shigyakusan* (*Cold Limbs Powder*) or *saikokeishito* (*Bupleurum and Cassia Twig Decoction*) to mice exposed to isolation stress induced by individual rearing, with the results that although dose dependent nature of anti-anxiety effects was observed in the group of *Shigyakusan*, no efficacy was observed in the group of *saikokeishito*.

Seshime et al. of National Institute of Health Sciences reported that they had directly administered Kampo prescriptions to human intestinal flora and observed the growth situation. For *clostridium welchii* that could possibly cause inflammatory diseases, the growth was significantly inhibited by *orento* (*Coptis Decoction*), *san'oshashinto* (*Three Huang Heart-Clearing Decoction with Three yellow color Herbs*), *shojokito* (*Minor Purgative Decoction*), *daiokanzoto* (*Rhubarb and Licorice Decoction*), *daiobotampito* (*Rhubarb and Mountain Bark Decoction*), *tokakujokito* (*Peach Kernel Purgative Decoction*), and *mashiningan* (*Hemp Seed Pill*). Of these, *orento*, *san'oshashinto*, *daiobotampito*, and *tokakujokito* did not have effects on bifidus bacteria.

Nishimoto et al. of Kitasato University reported that they had studied the actions of *hochuekkito* and its fractions on the mRNA

expression of immunity-related factors in the cells derived from the rat duodenum, and that the potentiating effects of expression of different genes had been observed in various fractions having different molecular weights, which means *hochuekkito* contains a wide variety of components that are responsible for adjusting the immune function of intestinal epithelial cells.

Takada et al. of Kitasato University reported that they had administered *shoseiryuto* to mouse models of upper airway inflammation induced by the inhalation of ovalbumin and observed its inhibiting effects on bronchial asthma through the mechanisms different from those of prednisolone.

Furumoto et al. of Kitasato University reported that *kamiuntanto* (*Modified Gallbladder-Warming Decoction*) had been found to have improving effects on sickness behavior induced by the administration of LPS to the abdominal cavity of mice and the effects were caused by the mechanisms involving the central nervous system, not the immune system.

Ishijima et al. of Hoshi University reported that they had orally administered polysaccharide fractions of *kakkonto* (*Pueraria Decoction*) to mice and observed the induction of cytokine production from macrophages and the induction of antibody production against the antigens administered at the same time, suggesting that polysaccharides of *Kakkonto* have immunostimulatory effects.

Iwashita et al. of Showa University reported that crude drugs showing the anti-inflammatory action had been selected by screening in vitro testing using the mouse macrophage-like cells and the action had been observed in *atractylodes*, *Lancea Rhizome* and *cinnamon bark*.

Oniishi et al. of Hiroshima University reported that they had incubated cultured human hepatocytes together with *orengedokuto* and

performed nano-MS analysis of chemical compounds migrating into cells, resulting in a detection of berberin in the cell membrane. They further reported that migrations to the cytoplasm and vacuoles had not occurred.

Shimada et al. of Musashino University reported that they had examined pharmacokinetics in the rats that had orally received 6-shogaol contained in dried ginger and found higher blood levels of 6-paradol, a metabolic substance of 6-shogaol, indicating 6-shogaol has high anti-inflammatory actions.

Arimune et al. of Osaka University of Pharmaceutical Sciences reported that the oral administration of *senkyuchachosan* (*Tea-Blended Szechwan Lovage Powder*) or *sokeikakketsuto* (*Channels-Dredging and Blood-Activating Decoction*) to rats, together with midazolam at the same time, significantly increased the highest blood levels of midazolam and AUC in both groups, indicating the inhibition of CYP3A in the digestive tract.

#### Clinical research for Kampo medicines

Kakikura et al. of Chiba University reported that in the 22 patients with climacteric disorders, who had received a preliminary examination of polymorphisms of estrogen receptor beta genes and taken *keishibukuryogan* (*Cassia Twig and Tuckahoe Pill*), scores of blood congestion significantly improved in the group of patients having LL allele compared to the group of patients having other polymorphisms. They further reported that *keishibukuryogan* had no effect in the patients having S allele.

Kue Hisashige et al. of Nihon University reported that they had conducted a questionnaire survey with regard to improvements after taking Kampo medicines in female patients visiting Kampo clinics due to the chief complaint of infertility and then conducted category

classification analysis of main ingredients with the findings of the relationship between three categories by-symptom and the corresponding Kampo prescription groups

#### Others

Nishiki et al. of Tokushima Bunri University reported that they had analyzed the prescription sheets received by dispensing pharmacies and found that there were more patients who were prescribed Kampo medicines in the orthopedics and many prescriptions were for Western medicines with Kampo medicines.

Komatsu et al. of Yokohama College of Pharmacy reported that they had conducted a consciousness survey in the College students concerning medical care with acupuncture and moxibustion and found increases in their interest in acupuncture and moxibustion and understanding thereof by attending the lecture of “Introduction to Acupuncture and Moxibustion.”