

Front Line of Kampo Pharmacology

Review of Research Presentations on Kampo Medicines 4

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This series will introduce the recent research and studies relating to Kampo medicines presented at academic conferences. This installment of the series provides the presentations planned to be made at The 131st Annual Meeting of Pharmaceutical Society of Japan in Shizuoka scheduled on March 28-31, 2011. Because of the Great East Japan Earthquake, the conference was cancelled. However, the contents of the abstracts planned for the March 28 presentation are regarded as having been published.

Research of quality evaluation of crude drugs and their discrimination

Yamauchi, et al. of Doshisha Women's College of Liberal Arts reported that an HPLC-UV method with the pre-treatment using a polyvinylpyrrolidone column is effective for analyzing arecoline contained in Aracea Seed.

Wakana, et al. of National Institute of Health Sciences reported that they have evaluated the quality of *Paeoniae Radix* by ¹H-NMR-based metabolom analysis and discriminated individual cultivars although production sites could not be differentiated.

Doi, et al. of Kanazawa University have evaluated the usefulness of a colorimeter for the quality evaluation of Ginger and Processed Ginger and clarified that the device can determine the intensity of heating although it cannot differentiate steamed ginger rhizomes.

Cultivation research of crude drug materials

Kojoma, et al. of Health Sciences University of

Hokkaido reported that they have investigated the content amount of liquiritin as a measure for growing the high quality **phyletic line of *Glycyrrhiza uralensis*** that is the plant material of Licorice and found large variations in content volume, which, they explained, positively correlate with the content volume of glucyrrhithic acid used as an indicator ingredient by Japanese Pharmacopoeia.

Development of crude drug products

Sakai, et al. of Hokkaido College of Pharmacy have developed a w/o cream containing *Cnidii Monnieri Fructus* and *Kochia Fructus*, reporting that it is sufficiently marketable as a commodity in view of stability, impression from use, and moisturizing effect.

Basic pharmacological study on crude drugs and Kampo formulas

Ohta, et al. of Toho University reported that they have investigated the in vitro action of aldose reductase inhibition of varieties of Kampo extract and found that *sokeikakketsuto* (Channels-Dredging and Blood-Activating Decoction) gives the strongest inhibition.

Yamabe, et al. of University of Toyama reported that *hachimijiogan* (Kidney-Qi Pill) and *bakumijiogan* (Eight-Immortal Pill for Longevity) have the action of complete recovery of renal function in the model of chronic renal failure in 5/6 nephrectomized rats.

Yamamoto, et al. of Suzuka University of Medical Science reported that they have investigated the effect of various Kampo extracts on the in vitro inhibition of parainfluenza type 2 viral proliferation and found that *kakkonto* (*Pueraria* Decoction) and *ryokankyomishingeninto* (Tuckahoe, Licorice, Dried Ginger, Schisandra, Manchurian wildginger, Pinellia and Apicot Decoction) have a strong inhibitory activity.

Aoki, et al. of Kitasato University reported on the activity of *maoto* (Ephedra Decoction) on influenza infection in mice and explained as the mechanism that it is caused by the elevating activity of antibody titer binding to the virus.

Kagioka, et al. of Nagoya City University reported that they have investigated, using mice, the activity of Processed Aconite Root on improving neuropathic pain, a side-effect of an anticancer drug oxaliplatin with the finding that alkaloids contained are the active ingredients.

Iizuka, et al. of Yokohama College of Pharmacy reported that they have investigated the **vasorelaxant activity** of Cyperi Rhizoma in the in vitro rat great arterial vessel preparations with the finding that the methanol extract has the relaxing effect on vasoconstriction induced by norepinephrine by releasing NO.

Nariai, et al. of The University of Tokushima reported that they have isolated and identified maackiain as an anti-allergic active ingredient from Sophorae Radix with the findings that the ingredient has the improving effect on a model rat allergic rhinitis induced by toluene 2,4-diisocyanate.

Fukuda, et al. of Josai University reported that while simultaneous administration of *maoto* (Ephedra Decoction) and oseltamivir (OT) elevates plasma concentrations of OT, these formulas suppresses the onset of brain inflammation; and it has the suppressive action of OT and OT being transported into the brain.

Harada, et al. of Saitama Medical University reported that in rats, food intake decreases and gastrointestinal tract motility weakens following the cerebral ventricular administration of urcortin and these conditions can be improved by *rikkunshito* (Six Gentlemen Decoction) through the activity of this formula to improve the secretion of ghrelin.

Hyuga, et al. and Shiraishi, et al. of Kitasato University reported that *maoto* (Ephedra Decoction) extract can suppress the ability-to-move of mouse osteosarcoma cells stimulated by hepatocellular growth factors through the downregulation of the expression levels of c-Met signal and protein.

Matsui, et al. of Fukuyama University reported that they have investigated the significance of Ricorice inclusion in *daiokanzoto* (Rhubarb and Licorice Decoction) using mice with the finding that liquiritin in licorice promotes the purgative activity of sennoside A present in Rhei Rhizoma.

Nishimoto, et al. of Kitasato University reported that they have investigated the action of enhancing the expression of immune-related factors of *hochuekkito* (Middle-Reinforcing and Qi-Benefiting Decoction) in rat digestive tract epithelial cells with the finding that both lipophilic constituents and water-soluble constituents have the immunostimulatory action.

Sekiya, et al. of Kitasato University reported that *hochuekkito* (Middle-Reinforcing and Qi-Benefiting Decoction) produces the ameliorating activity in a mouse model of impaired gastric and intestinal epithelium created by the intraperitoneal administration of methotrexate with an increased level of expressions of Reg III- γ , a member of C-type lectin.

Nishimura, et al. of RIKEN reported that in order to evaluate the enhancing action of ghrelin secretion of *rikkunshito* (Six Gentlemen Decoction) by in vivo testing, (although the action has been evaluated only by in vitro testing) they have developed a method for verifying the action of *rokkunshito* by the synthesis of ghrelin having complexation with radioactive metal ^{68}Ga , which is then administered to the rat.

Nakagawa, et al. of Kyoto University reported that in a morphine-dependence induced mouse, *yokukansan* (Liver-Inhibiting Powder) significantly suppresses withdrawal symptoms produced by naloxone (jumping behavior, weight loss, diarrhea) and *Uncariae Uncis cum Ramulus* and licorice in *yokukansan* have the action of alpha 2 receptor antagonist.

Iijima, et al. of Nihon University reported that they have observed the increased number of endothelial progenitor cells in the blood and the reduced number of positive cells of reactive oxygen species in mononuclear cells in spontaneous hypertensive rats following the administration of *saikokaryukotsuboreito* (Bupleurum plus Dragon's Bone and Oyster Shell Decoction).

Gan, et al. of Hokuriku University reported that *bofutsushosan* (Divaricate Saposhnikovia Miraculous Powder) exhibits the antihyperglycemic action in streptozocin-induced diabetic rats and several ingredients are responsible for the activity.

Kato, et al. of Taisho Pharmaceutical Co., Ltd. reported that *Lycii Cortex* improves, through the serotonin nervous system, attacking behavior in mice induced by isolation rearing and it gives the anti-stress action.

Nakazawa, et al. of Tohoku Pharmaceutical University reported that hirusutine contained in *Uncariae Uncis cum Ramulus* gives the onset of antipsychotic action mediated by the inhibiting action of σ_1 , D2 and 5-HT_{2A} receptors.

Oda, et al. of Keio University reported that they have evaluated the in vitro anti-inflammatory action of magnolol contained in *Magnoliae Cortex* and metabolites of magnolol, using macrophages with the finding that only magnolol is active and the metabolites have no anti-inflammatory action.

Pak, et al. of University of Toyama reported that loganin contained in *Corni Fructus* has the improving action of oxidant stress, inflammatory response, and apoptosis in the spontaneously diabetic mouse models in db/db mice.