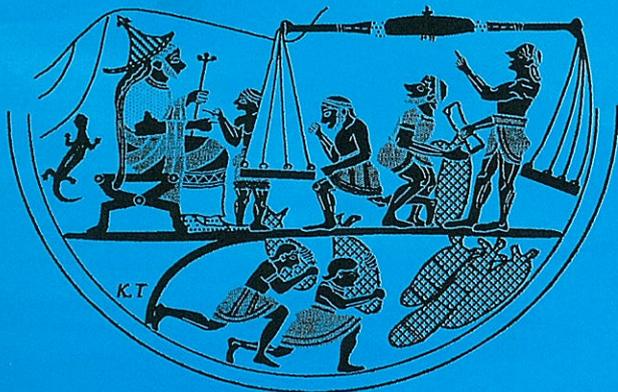


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S19-2 Globalization of Kampo medicine: Challenges and opportunities

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At this time, in the United States, three powerful factors exist which mean that Kampo has unprecedented opportunities for globalization. First, there is widespread interest in "more natural, less toxic" alternatives to prescription medications. Second, the aging population seeks multiple means to prevent illness and promote health. Third, both state governments and businesses seek to lower medication costs. Yet recent events mean that Kampo faces significant barriers to globalization in the West. This includes widespread negative publicity regarding 1) toxicity of poorly-produced and regulated Chinese herbal medicines, 2) documentation of negative herb-drug interactions in popular Western herbal medications, and, 3) toxicity of popular prescription agents with great pre-randomized control trial (RCT) data, such as estrogen, or even agents with RCT data, such as COX-2 inhibitors. This presentation will review the most recent developments in the United States regarding herbal medications and the public, the National Institutes of Health (NIH), the Food and Drug Administration (FDA) and the Congress. Finally, this presentation will identify the three most important barriers to globalization and suggest the three most valuable strategies for this audience to consider.

S19-4 Aquaporins provide new insights into the molecular mechanisms to maintain water homeostasis, as a shared target of Oriental and Western medicines

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Although Oriental herbal medicines normalize disorders of water homeostasis that occur in various diseases, their mechanisms are not fully understood. Previous investigations of this field originated with the hypothesis that ion transport was responsible for local osmotic gradients, and that water is coupled to ion movement by osmosis. However, water permeability of cell membranes, such as those in kidney tubules and alveoli, is 5- to 50-fold enhanced by aquaporin (AQP) water channels. Studies in AQP-null mice have indicated important roles for AQPs in the urinary concentrating, fluid secretion by glands, brain swelling and skin moisture. These phenotypes of AQP-null mice remind us an application of AQP inhibitors in the treatment of disorders of water homeostasis and a possibility that herbal medicines may inhibit AQPs. To examine this hypothesis, we studied the effects of herbal medicines on membrane water permeability. *Goreisan*, *Sojutsu* and its mineral fraction significantly inhibited AQP-mediated water transport *in vitro* assay. The inhibitory effect of minerals on AQP isoforms and *in vivo* effect of *Goreisan* on brain edema will be also discussed.

S19-3 Economic evaluation for Kampo medicine

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It is important to accumulate evidence pertaining to Kampo medicine in reflection of the evidence-based medicine. In addition, there is growing interest in assessment from the perspective of health economics while also focusing on health resource utilizations by Kampo medicine.

In the economic evaluation of medicines, a cost-effectiveness analysis is commonly used, and clinical effectiveness and QOL scores are used as measures of outcome in the analyses. The evaluation of Kampo medicine in terms of QOL is considered to be useful in demonstrating the characteristics of Kampo medicines that differ from those of Western medicines.

The potential economic benefits of Kampo medicine can be considered as follows:

- (1) The prompt amelioration and elimination of symptoms resulting from the administration of Kampo medicine and concomitant use of Western medicine leads to a reduction in health care costs.
- (2) Since Kampo medicines have a compound action, a single Kampo medicine is able to accommodate multiple symptoms, thereby leading to a reduction in the amount of medicine prescribed.
- (3) Since treatment with Kampo medicine improves the general condition of the patient through harmony between the mind and body, the occurrence of complications during times of depressed body functions is prevented.

S19-5 Evaluation of the effects by Kampo medicine by gene chip system

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The scientific study of Kampo, traditional Japanese herbal medicine, challenges both pharmacologists and physicians. First, Kampo prescriptions often use multiple ingredients and even one herb or mushroom contains many potential active ingredients. For every documented pharmacologic action, there may be more than active responsible ingredient. Second, Kampo ingredients are frequently metabolized in the intestine or the liver. The study of original Kampo components may not reflect the active components in the body. Thus results from *in vitro* experiments may not reflect the *in vivo* action. Third, biomarker studies may not lead to understanding the comprehensive actions of Kampo drugs. To address these many challenges, at Keio University, we study Kampo interventions using SPF and germ free-mice in conjunction with the Affymatrix gene chip system. This system allows the observation of the entire mouse's gene expression including genes with unknown functions. Additionally, this technology allows us also to evaluate the relationship between organs. We have done several experiments using this technology. I will present the result of our experiments and discuss the advantages and disadvantages of this methodology.