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Microflora in the Gut and Gene Expressions of the Host

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Traditional herbal therapy has been revalued in developed countries in these days. One of the characteristics of the traditional medicine in China, Korea and Japan is multi-herb therapy. Kampo medicine is one of the traditional medicine in Japan and currently widely used by physicians in daily clinic.

Even though it is widely accepted that Kampo medicine is effective and beneficial for the patients, the mechanism of action is still not clear. There are some challenges to study this kind of multi-herb medicine.

First of all, because indication of Kampo drug is individualized, it is very difficult to do the clinical research uniformly. Secondly, even one herb or mushroom contains a lot of ingredients, the multi-herb drug contain a large number of ingredients. Thirdly, ingredients in Kampo usually become active after metabolized in the intestine or the liver. That is why the in vitro experiment does not reflect the in vivo action. Conventional way to study Kampo is to follow several bio-markers. It is very difficult to understand the comprehensive actions of Kampo drugs by this method. To understand the comprehensive actions of Kampo drugs, we use gene chip system. This system allows the observation of the whole gene expressions in the body including unknown genes. Also this technology allows us also to evaluate the relationship between organs.

Adding to that, through the comparison between germ free (GF) and regular specific pathogen free (SPF) mice, we found that some genes are changed only with intestinal flora. Although it has been assumed that Kampo medicine changes intestinal flora, it has not been shown explicitly until molecular biological technology is developed to detect intestinal flora comprehensively. Now we

know that Kampo medicine changes intestinal flora leading to affect host gene expression.

We are still at the starting point to understand the relationship between intestinal flora and mechanism of action of Kampo medicine. I would like to share the future problems to solve.