

# I – 5

## Pre-clinical model for a long term potable effects of ‘Hita-Tenryousui’ mineral water on the physical conditioning.

○Lindsay Sydney N. Fajardo<sup>1)</sup>, Takaaki Yahiro<sup>1, 2)</sup>, Yuka Anan<sup>1)</sup>,  
Kyoko Shinohara<sup>1)</sup>, Masafumi Inomata<sup>3)</sup>, Hidekatsu Iha<sup>1)</sup>

1) Department of Microbiology, Oita University Faculty of Medicine,

2) Department of Pathobiology and Medical Diagnostics, Faculty of Medicine and Health Sciences,  
Universiti Malaysia Sabah,

3) Department of Gastroenterological and Pediatric Surgery, Oita University Faculty of Medicine.

### 【Background】

‘Hita-Tenryousui’ mineral water (HT-water) has been recognized for its unique quality of alkalescence (pH8.6). HT-water contains extraordinary high silicic acid (8-fold more than that of the average mineral water), 30% more sodium hydrogen carbonate, and 3-fold less sulfate.

Although many HT-water consumers claim its ‘health conditioning effects’, placebo effect could not be excluded since these consumers drink HT-water with high expectations of such ‘effects’. To exclude any placebo effect, we utilized our mice model system which quantitates mainly anti-obese properties of orally administrated ingredients. Here we report the results of HT-water’s ‘physical conditioning’ effects although the effects did not reach statistical significance.

### 【Materials & Methods】

To establish the long term potable effects of HT-water on the physical conditioning, that is frequently claimed HT-customers, eight weeks old control or testing mice (N=10, in each group) of male C56BL/6 were raised with standard diet with HT-water (testing group: HTG) or tap water (control group: TCG) for six months. The conditioning effects of HT-water versus tap water were evaluated with 1. weight increase ratio; 2. diet intake amount; 3. water consumption amount; 4. quantitation of biochemical values of sera including uric acid level; 5. body fat measurement with CAT-scan; and 6. quantitation of UCP-1 messenger RNA in each visceral fat by RT-PCR.

### 【Results & Discussion】

After 6 months breeding, 1. The average weight gaining ratio was 53% for HTG and 57% for TCG ( $p=0.409$ ); 2. The average weekly dietary intake was 29.9g (SD: 2.1g) for HTG and 28.8g (SD: 2.5g) ( $p=0.012$ ); 3. The average weekly drinking water intake was 36.0ml (SD: 3.7ml) for HTG and 36.1ml (SD: 4.2ml) for TCG ( $p=0.727$ ); 4. Biochemical values in sera (TAG, ALP, ALT, AST and uric acid) were all comparable (no statistical significance); 5. The average visceral fat volume of HTG reached 21% less than TCG ( $p=0.132$ ); and 6. The average UCP-1 expression level was increased in HTG (3.89 fold than TCG,  $p=1.71$ ).

Although the weight increasing ratio in both groups did not show any significant difference (rather lower in HTG), the consumed diet amount was statistically greater in the HTG than that of TCG. Since UCP-1 expression level was also higher in HTG, these results suggested that HT-water might have the lowering effects for food assimilation or enhancing fat-burning properties in mice metabolism with its alkalescence nature.