An Extract of Ba-wei-die-huang-wan (THC-002) Increases Skin Temperature and Inhibits Cold-Stress Induced Detrusor Overactivity Related with TRPM8 in Rats

Introduction and Objective: This study determined if a Ba-Wei-Die-Huang-Wan Extract (THC-002) could increase skin temperature, and inhibit cold-stress induced detrusor overactivity due to decreased transient receptor potential channel M8 (TRPM8) expressing on the skin.
Materials and Methods: Twenty-four female 10-weeks Sprague-Dawley (SD) rats were randomly separated into two groups (n=12 in each), and then skin temperature of their shaved leg was measured. One group was orally given 100mg/5ml per kg-body weight THC-002 daily for one week. Another was similarly given 5ml per kg-body weight THC-002-free control saline. At 7 days after, cystometric investigations of the unanesthetized rats were performed at room temperature (RT, 27±2°C) for 20 min, and at low temperature (LT, 4±2°C) for 40 min. During the cystometric investigations, the micturition parameters were recorded, and the skin temperature was simultaneously measured at RT, LT 5, 10, 20, 30, and 40 min. After the cystometric investigations, TRPM8 mRNA expression level of the skin was semi-quantitatively analyzed.
Results: At 7 days after administration, the skin temperature of THC-002-treated rats was significantly higher than that of the control rats (Figure 1). After transferring to LT, the skin temperature of the both groups was significantly decreased; however, the skin temperature did not alter from 20 min to 40 min (Figure 1). During 20 min after transferring from RT to LT, voiding interval (3.16±0.27 min), micturition volume (0.45±0.03 ml), and bladder capacity (0.55±0.04 ml) of the THC-002-treated rats were significantly higher than those of the control rats (2.36±0.28 min, 0.41±0.05 ml, 0.45±0.05 ml, respectively). TRPM8 mRNA expression level of the THC-002-treated rats was lower than that of the control rats.
Conclusion: THC-002 significantly increased skin temperature, and decreased TRPM8 mRNA expression level on the skin. Therefore, cold-stress induced detrusor overactivity of THC-002-treated rats was partially inhibited.

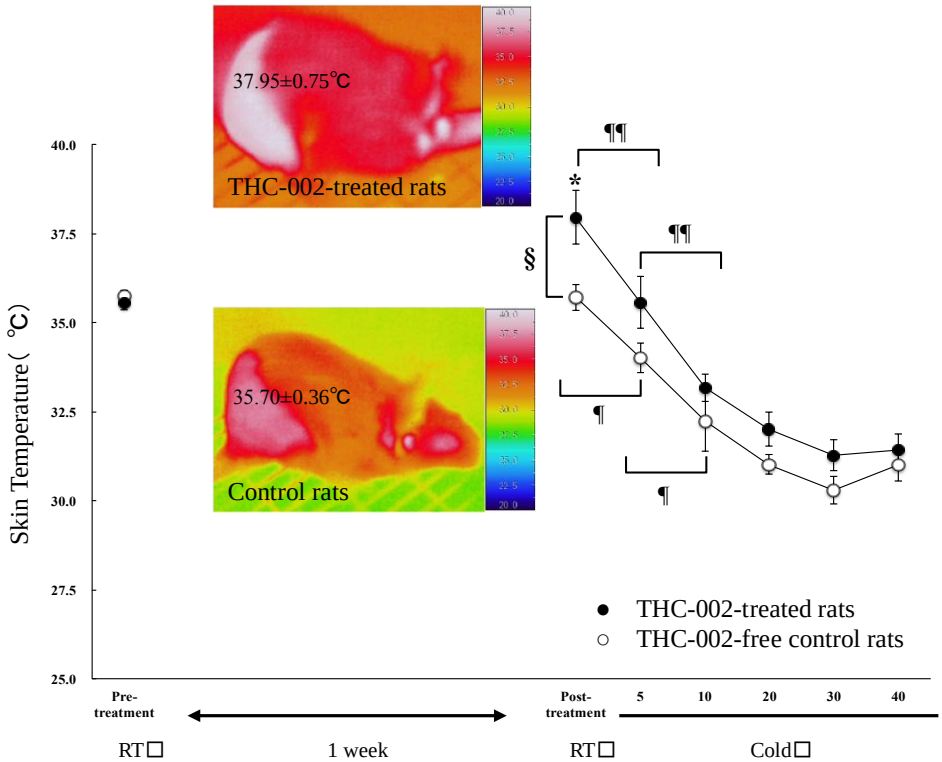

Figure 1. Measurement of leg skin temperature in each condition. At 7 days after administration, the skin temperature of THC-002-treated rats (top) was significantly higher than that of the control rats (bottom). *P<0.05, compared to pre-treatment in each group, §P<0.05, compared to control at post-treatment RT, ¶P<0.05, ¶¶P<0.01, compared to temperature between RT and LT 5 min, or LT 5 min and LT 10 min in each group