短報

Weight Gain Induced by Juzentaiho-to
in Rats

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Abstract Background: The present study investigates the effect of Juzentaiho-to on normal weight increase in rats. Juzentaiho-to is a traditional Japanese 'Kampo' medicine and causes increased appetite in patients.

Method: Ten male 4-week-old wistar rats were divided into two groups. The five rats of the J group were fed CE-2 including 1% Juzentaiho-to, and the five rats of the C group were fed CE-2. The animals weights were measured weekly.

Results: The J group had grown significantly heavier than the C group at 15 weeksold.

Conclusions: Juzentaiho-to causes an increase in body weight in rats.

Key words: Juzentaiho-to, weight gain, rat.

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Introduction

Juzentaiho-to, a traditional 'Kampo' medicine used in Japan, is a mixture of ten medicinal plants. Juzentaiho-to causes an increase in appetite, thereby alleviating anemia or extreme exhaustion, according to ancient sources such as the 'Shang Han Lun.' Minematsu et al¹⁾ reported that Juzentaiho-to did not cause an increase in body, weight gain in rats, whereas it did produce a gain in mice²⁾.

In this study, the authors aimed to ascertain whether Juzentaiho-to causes increases in weight gain in rats.

Materials and Methods

Materials

Ten male 4-week-old Wistar rats (Sankyo Laboratories, Sapporo, Japan) were used in this study. They were separated into two groups: the Juzentaiho-to (J) group, containing five rats fed with CE-2 (Clea Japan, Tokyo, Japan) including 1% Juzentaiho-to (Tsumura, Tokyo, Japan); and the control group (C), in which five rats were fed with

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Figure 1 Curves produced by changes in body weight from 5 weeks to 15 weeks old. The J group had grown significantly heavier than C group at 15 weeks old (mean $\pm$ SE).

CE-2 alone. All food was produced by Clea Japan at approximately the same time. The rats were allowed a week to adapt to their new conditions before measurements were taken.

Breeding conditions and body weight measurements

The rats were kept under constant conditions (temperature 22°C; relative humidity 45%; light/dark regime 14:10 hours, with light from 05:00 to 19:00 o'clock) in the animal laboratory of Asahikawa Medical College. Two or three rats lived together in a cage, with free access to forage and tap water. Body weight was measured between 09:00 and 12:00 o'clock once a week.

Statistical Analysis

Group comparisons were performed using the Student's t test.

Results

None of the animals were excluded from the study. Figure 1 shows curves produced by changes in body weight from 5 weeks to 15 weeks old. The J group had grown significantly heavier than the C group at 15 weeks old ($p<0.05$).

Discussion

Juzentaiho-to has been given to patients recovering from physical debilitation, traditionally those with anemia, anorexia, or fatigue, in whom it promotes a desire to eat³⁾. Juzentaiho-to is effective for physically weak persons, whose state is called 'Kyosho' or Deficient-type constitution, and ineffective for physically healthy persons. Minematsu et al¹⁾, showed that there was no significant difference in body weight gain between groups of rats fed on forage along with Juzentaiho-to, and those not receiving Juzentaiho-to.

This seems to indicate that Juzentaiho-to has no effect upon weight gain in healthy rats, a state referred to as 'Jissho', or Excessive-type constitution.

In contrast to Minematsu's results, the authors found that rats (five/group) did experience an increase in body weight gain when fed a diet of forage containing Juzentaiho-to. This discrepancy was thought to be due to a distinct difference in the method in which the Juzentaiho-to was administered: in Minematsu's study, Juzentaiho-to was dissolved in water and given to rats via gastric tube. Forcing the rats to drink created conditions of stress; stress inhibits increases in body weight⁴⁾. In the authors' study, administration of Juzentaiho-to did not cause the animals stress as it was mixed in with their usual forage. Further study is needed to ascertain the effects of the method of Juzentaiho-to administration on weight gain.

In this study, rats ate CE-2 containing 1% Juzentaiho-to; patients, however, are given 7.5g/day at most. Therefore, Juzentaiho-to would be expected to have less effect on weight gain in humans. The effects of Juzentaiho-to on young persons whose constitution is similar to the robust, 'Jissho' state of the rats must also be considered.

Conclusion

We conclude that Juzentaiho-to increases body weight gain in rats with natural growth.

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