

Inadequate timing of daily food intake may affect reproductive function in post-adolescent female rats

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To investigate the effects of meal timing during circadian cycle on the ovarian function, we performed animal experiments using young female rats. Eight-week-old female Wistar rats were classified into 3 groups: fed during the daytime only (non-active phase), night-time only (active phase), or control group I (without time or calorie restriction) for 4 weeks, and daily body weight and frequency of ovulation in each group were measured by a weight scale and a vaginal smear, respectively. At the end of the period of dietary restriction, ovaries were removed and the numbers of growing follicles and corpora lutea were evaluated based on hematoxylin-eosin-stained tissue sections. In addition, 8-week-old female rats were fed only during the night-time for 4 weeks under a 20% reduced food supply of the control group II (without any restriction). In the daytime-fed group, the frequency and number of ovulations were significantly decreased compared with those in the control group I. This group also showed a reduced body weight gain concomitant with about 20% of reduction in the daily food intake. In contrast, in the night-time-fed group, even when a 20% reduction of the daily food intake was loaded, frequency of ovulation did not change as

compared with control group II. These findings indicate that restricting food intake to the inactive phase impairs ovarian function in post-adolescent female rats, proposing that the timing of food intake during circadian cycle is an important factor to interfering with the reproductive function.

Speaker Biography

Tomoko Fujiwara, is a Professor at Kyoto Notre Dame University, graduated from Nara Women's University in 1984 and Master Course, Nara Women's University in 1986. She was appointed as Professor at Ashiya College in 2007. She obtained Doctor of Philosophy from Nara Women's University in 2009. In the meantime, she served as an Editor-in-chief, Bulletin of Ashiya College in 2009-2015. From 2015, she is Professor, Department of Home Science and Welfare, Kyoto Notre Dame University, Kyoto, Japan. She has been studying the pathological relationship between dietary habits and reproductive functions in young women and published many papers such as "Fujiwara T Nakata R (2010) Skipping breakfast is associated with reproductive dysfunction in post-adolescent female college students. *Appetite* 55: 714-717."

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