

再録 ポスター発表

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Deference in dietary fatty acid composition changes energy metabolism,  
biological rhythm and sleep.

Katsuhiko Yajima\*, Hitomi Ogata\*\*\*, Momoko Kayaba\*\*\*\*, Insung Park\*\*, Yoshiaki Tanaka\*\*,  
Makoto Sato\*\*, Kumpei Tokuyama\*\*

\*Tokyo Seiei College \*\*University of Tsukuba \*\*\*Hiroshima University \*\*\*\*Tokyo Medical University

要旨

The study was a randomized single-blinded repeated measures design. Ten males participated two sessions of indirect calorimetry in a whole-room calorimeter. In each session, subjects consumed the meal based on safflower oil (42% of energy as fat, 57.6% as oleic acid, 7.8% as palmitic acid) or meal based on palm oil (42% of energy as fat, 37.6% as palmitic acid, 41.6% as oleic acid) in three meals. Sleep electroencephalogram was measured during nighttime and blood sampling was collected at 8 time points during 24 h indirect calorimetry to assess clock gene expression in leukocyte.

Compared with meal rich in saturated fatty acid, consumption of high monounsaturated fatty acid meal induced the followings: 1) Fat oxidation was significantly enhanced throughout the day, 2) Core body temperature was lowered in the evening and the first half of the sleep (from 19:00 to 2:00), 3) Slow wave sleep was significantly increased in the first sleep cycle. Present study is the first study that evaluated biological rhythms in the same individuals: energy metabolism, core body temperature and sleep. It raised the possibility that the ingestion of different fatty acids may affect all of these parameters of biological rhythm. High intake of saturated fatty acids may be a risk factor of obesity through circadian misalignment and inhibit fat oxidation.