

**25th International Conference on
HUMAN METABOLIC HEALTH- DIABETES, OBESITY & METABOLISM
&
2nd World Congress on
NUTRITION AND OBESITY PREVENTION
March 21-22, 2019 Dubai, UAE**

The adipocyte response to autophagy in adult rat groups receiving different nutritional treatments during childhood

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Studies reported autophagy gene expressions are increased in the visceral fat in obese persons, associated with obesity-related cardio-metabolic risk. It wasn't known whether this up-regulation differs in obese persons who were already fat from childhood compared to people who were under nourished at a young age. MAP1LC3B/LC3B (microtubule-associated protein 1 light chain 3 β) is known as an autophagy-regulating gene. We used rats, a common test subject in obesity experimentation. We hypothesize that autophagy gene expression is higher in the visceral adipocytes of obese adult rats which were under nourished at childhood in comparison to obese adult rats which were already obese before-hand. Four-week-old male Sprague-Dawley rats, after acclimatization, were randomly assigned to three treatment groups given a low-caloric diet (n=5), a standard-caloric diet (n=5) and a high-fat diet (n=5) for 8 weeks. Afterwards, all groups were fed a high-fat diet for 20 weeks. There was a group fed with standard chow diet as control. The visceral adipose fat was then collected for PCR examination. After the first standard chow diet as control 8 weeks, the group was given a low-caloric diet which had a significantly lower body weight than other groups. After the following 20 weeks, this group experienced the highest change in body weight. The relative mRNA expression of the MAP1LC3B/LC3B of this group increased significantly compared to control (p=0.047) and the high fat diet group (p=0.037). In conclusion we found that obese adult rats that were under nourished at childhood have a higher relative autophagy gene expression compared to those who were previously normal or obese.

Biography

Lailan Safina Nasution is currently a Doctoral student in Biomedical Sciences, Faculty of Medicine, Universitas Indonesia. She is also working as a Lecturer in the Department of Nutrition Faculty of Medicine, Universitas Muhammadiyah Jakarta, Indonesia.

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