



## Conference Abstract

# P.26 Liver Transglutaminase 2 Level Comparison Among Different Dietary Interventions

Elif Oztemiz\*, Soner Dogan, Bilge Guvenc Tuna

Yeditepe University

### Keywords

Tissue transglutaminase  
calorie restriction

### ABSTRACT

**Purpose/Background/Objectives:** Tissue transglutaminase (TG2) is a highly expressed protein especially in endothelial cells. TG2 has several functions including transamidation activity which is important in several processes such as extracellular matrix remodeling [1]. TG2 activity takes place in aortic stiffness regulation and atherosclerotic plaque formation [2]. One of the most effective implementation for atheroprone state and general cardiovascular health is calorie restriction (CR). In addition, lipid accumulation and subsequent metabolic disorders can be regulated by CR and longer lifespan can be achieved [3]. In this study we aimed to determine the effect of different CR application types on liver TG2 levels of female mice fed up to 82 weeks old age.

**Methods:** For this purpose, female MMTV-TGF- $\alpha$  mice fed with different dietary regimes; *ad libitum* (AL), chronic CR (%15 restriction of AL group), intermittent CR (3 weeks AL (ICR-ReFeed)+1 week %60 restriction of AL (ICR-Restricted), between 10-week to 82-week old. Liver tissue was isolated at 10-week old (AL mice as baseline), 50 and 82 weeks. Then, liver tissue samples were homogenized for western blotting. Analysis made by ImageLab software and Glyceraldehyde-3-Phosphate Dehydrogenase used as housekeeping gene.

**Results:** TG2 levels were increased in CCR and ICR-R groups, decreased in ICR-RF compared to AL group. In addition, 82-week old AL mice had higher level of TG2 than 10-week old.

**Conclusion:** These results may provide future perspectives about TG2 levels depending on feeding protocols and ageing in kidney. TG2 levels in arteries of the same groups will be examined in further studies.

### REFERENCES

- [1] Fontana L. The scientific basis of caloric restriction leading to longer life. *Curr Opin Gastroenterol* 2009;25:144–50.
- [2] Matlung HL, Neele AE, Groen HC, van Gaalen K, Tuna BG, van Weert A, et al. Transglutaminase activity regulates atherosclerotic plaque composition at locations exposed to oscillatory shear stress. *Atherosclerosis* 2012;224:355–62.
- [3] Kim DH, Bang EJ, Jung HJ, Noh SG, Yu BP, Choi YJ, et al. Anti-aging effects of calorie restriction (CR) and CR mimetics based on the senoinflammation concept. *Nutrients* 2020;12:422.

© 2020 Association for Research into Arterial Structure and Physiology. Publishing services by Atlantis Press International B.V. This is an open access article distributed under the CC BY-NC 4.0 license (<http://creativecommons.org/licenses/by-nc/4.0/>).