

13<sup>th</sup> International Conference on

# Tissue Engineering & Regenerative Medicine

July 12-13, 2018 Paris, France

## Therapeutic potential of IL-1 $\beta$ -primed mesenchymal stem cells in non-alcoholic fatty liver disease

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**Introduction:** Nonalcoholic fatty liver disease (NAFLD) is an increasing cause of chronic liver disease and broadly defined by the presence of steatosis with inflammation and progressive fibrosis. We have reported the therapeutic potential of human adipose tissue-derived multi-lineage progenitor cells (hADMPCs) in liver fibrosis but not NAFLD activity scores (NAS) of model mice.

**Aim:** In this study, we aimed to identify the bio-active, which could activate hADMPCs as the representatives of mesenchymal stem cells (MSCs), and to show the selected IL-1 $\beta$ -primed MSCs could improve the NAFLD.

**Methods & Results:** To select the activating bioactive, hADMPCs were challenged to 160 kinds of bio-active proteins, and the cells were applied for DNA microarray analysis. Principal component analysis showed seven bio-actives could significantly prime hADMPCs. Of these bio-actives, IL-1 $\beta$  was selected, because IL-1 $\beta$ -primed hADMPCs could show 1200 fold or more-augmented mRNA-expressions of hepato-protective G-CSF. To confirm the IL-1 $\beta$ -activated ADMPCs could improve NAFLD, the cells were applied for the NAFLD model mice. The NAFLD mice received hADMPCs, IL-1 $\beta$ -activated ones, or placebo control via tail vein at an age of six weeks and were applied for histological at an age of nine weeks. The mice treated with hADMPCs or IL-1 $\beta$ -activated hADMPCs but not with placebo exhibited a significant reduction in liver fibrosis, as evidenced by Sirius red staining. IL-1 $\beta$ -primed hADMPCs could improve the NAS more than those of the non-activated ones nor control.

**Conclusion:** We show the IL-1 $\beta$ -primed sADMPCs could be applicable for the diseases

### Biography

Hanayuki Okura has completed her PhD degree from Osaka University Graduate School of Medicine. She has received Research Fellowship for Young Scientists of Japan Society for the promotion of science in her graduate school student years. She has performed her researches in The Center for Rare Diseases Research, National Institutes of Biomedical Innovation, Health and Nutrition, Japan as the Deputy Director of the center. She is now a Professor at Fujita Health University, Aichi, Japan.

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