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Abstract

NAD+ Supplement Rescues Adipogenesis and Metabolism in Werner Syndrome

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Abstract:

Werner Syndrome (WS), also called progeria, is a hereditary condition associated with premature aging and an increased risk of cancer and other diseases. Signs of Werner Syndrome usually develop in the childhood or teenage years, which usually includes type 2 diabetes, dysregulation of metabolism, gray hair and hair loss, etc. Metabolic dysfunction is a primary feature of WS, who exhibits severe metabolic deficit. We generated the WRN-/- stem cell model using Crispr/cas9 technique. Our current work found that the loss of WRN could cause dysregulation of metabolism in vitro. The adipogenesis was prematured in WRN-/- cell model compared with the wildtype, and some adipocyte markers, CEBP and PPAR alpha, which were supposed to express on day 14 or day 21 showed up much earlier. However, when NAD+ was replenished, the adipogenesis could be rescued. Also the zebrafish model system showed similar phenomenon, which might help explain why Werner Syndrome patients had metabolic dysfunction. Then we did transcriptomic RNA-Seqand found out the loss of WRN during adipocyte development might caused by mitophagy. Our results demonstrated that NAD+ augmentation restored mitochondrial biogenesis and adipogeneticmetabolism both in vitro and in vivo.

Biography:

Tian Yuyao is a Ph.D now studying in The Chinese University of HongKong, School of Biomedical Sciences. She has completed her master study from Peking University

Publication of speakers:

- Site Attachment Inhibition Therapeutics: Dealing with Association and Causation Issues. Joint Event on Global Summit on Immunology and Cell Biology & Global Congress on Bacteriology and Infectious Diseases. June 25-26.
- Use of Gabapentin in the Treatment of Substance Use and Psychiatric Disorders: A Systematic Review. Ahmed S, Bachu R, Kotapati P, Adnan M, Ahmed R, Farooq U, Saeed H, Khan AM, Zubair A, Qamar I, Begum G.Front Psychiatry. 2019 May 7;10:228
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