P5. Effect of Deep Sea Water on Adipogenesis by the Regulation of Lipid Mtabolism

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1. PURPOSE

Deep sea water (DSW) is one of natural resources receiving much attention for biological and clinical applications such as health food, cosmetic, and medical field. DSW, from the pharmacological point-of-view, is safe and contains high content of minerals including magnesium and calcium. In this study, we investigated the effect of DSW on adipogenesis and lipid metabolism in 3T3-L1 cells.

2. METHOD

To quantify lipid accumulation using differentiated 3T3-L1 adipocytes, we performed Oil Red O staining. Furthermore, to know more detailed regulatory mechanisms by DSW on lipid metabolism, we first measured GPDH activity. We also investigated expression levels of PPARγ and C/EBPα for adipogenic genes, SREBP1c and FAS for lipogenic genes, HSL and ATGL for lipolytic genes, UCP1 for fatty acid oxidation, and several anti-obesity adipokines using qRT-PCR.

3. CONCLUSION

DSW inhibited adipogenesis and lipid accumulation in a dose-dependent manner. DSW also reduced mRNA expression levels of adipogenic, lipogenic and lipolytic genes. On the other hand, DSW increased expression of UCP1 and anti-obesity adipokines. Taken together, our results suggest that DSW has anti-obesity potential by inhibition of adipogenesis and lipid metabolism and by stimulation of anti-obesity adipokines expression. [This work was financially supported by the National R&D project of “Development of new application technology for deep seawater industry" supported by the Ministry of Oceans and Fisheries of the Republic of Korea. (20150274)]