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Lyso-DGTS lipid isolated from microalgae enhances PON1 activities *invitro* and *invivo*.

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High-density lipoprotein (HDL) plays an important role in preventing atherosclerosis. The antioxidant effect of HDL is mostly associated with paraoxonase 1 (PON1) activity. Increasing PON1 activity using natural compounds may improve HDL functions and decrease atherosclerotic risk. In a previous study we isolated the compound, lyso-DGTS (C20:5,0) from *Nannochloropsis* sp. ethanol extract. In the present study, the effect of lyso-DGTS on PON1 activities was examined and the mechanism by which the compound affects PON1 activity was explored. Lyso-DGTS increased and preserved recombinant PON1 (rePON1) and human serum PON1 activities in a dose dependent manner. Tryptophan-fluorescence-quenching assay and molecular modeling calculations, showed a spontaneous lyso-DGTS - rePON1 interaction which supported by hydrogen bonds and van der Waals interactions. Furthermore, Lyso-DGTS increased penetration of rePON1 into macrophages and prevented macrophages from lipid accumulation after stimulation with oxidized low-density lipid (ox-LDL). *In-vivo* experiment show that Lyso-DGTS significantly increased PON1 lactonase activity and decreased glucose concentrations in a serum of mice fed a high-fat diet to the level of mice fed a normal diet. Our findings suggest a beneficial effect of lyso-DGTS on increasing PON1 activity and thus, improving HDL quality and atherosclerotic risk factors.

Biography

Soliman Khatib has completed his PhD at the age of 27 years from the Technion institute, Natural Science, Chemistry 1996-2000. BSC, from Ben-Gurion University, Natural Science, Chemistry 1993-1995. Now I am a Researcher in the laboratory of oxidative stress Migal-Galilee Research institute and a Senior lecturer, Department of Biotechnology Tel-Hai academic collage. My research focus on understanding the relationship between oxidative stress and diseases related to oxidative stress, we identify volatile organic compounds (VOCs) as early biomarkers of diseases related to oxidative stress. And also to isolate and identify natural compound which improve HDL quality and functions for diseases risk of atherosclerosis disease.

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