

عنوان مقاله:

Effects of alpha-mangostin on memory senescence induced by high glucose in human umbilical vein endothelial cells

محل انتشار:

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خلاصه مقاله:

Objective(s): Hyperglycemia induces cellular senescence in various body cells, such as vascular endothelial cells. Since the vessels are highly distributed in the body and nourish all tissues, vascular damages cause diabetes complications such as kidney failure and visual impairment. Alpha-mangostin is a xanthone found in mangosteen fruit with protective effects in metabolic syndrome and diabetes. This paper has investigated the protective effect of this xanthone against high glucose-induced memory senescence in human vascular endothelial cells (HUVECs) in the presence of metformin, as a positive control. Materials and Methods: To induce the memory senescence model, HUVECs, after three days incubation with high glucose, were incubated with normal glucose for another three days, and for whole six days, cells were treated with metformin (50 μ M) or alpha-mangostin (1.25 μ M). On the last day, cell viability by MTT assay, oxidative stress by fluorimetric assay, the number of senescent cells by SA beta-galactosidase staining kit, and secretory interleukin-6 by ELISA kit were measured. SIRT1 and P53 proteins were also evaluated by Western blotting. Results: Metformin and alpha-mangostin significantly increased cell viability, decreased reactive oxygen species, and senescence-associated beta-galactosidase in HUVECs incubated in metabolic memory condition. Generally, metabolic memory increased p53 and acetyl-P53 and decreased SIRT1 proteins in HUVECs, which were reversed by alpha-mangostin and metformin. Conclusion: These data exhibit that alpha-mangostin, comparable to metformin, protects endothelial cells against metabolic memory-induced senescence, which is likely via SIRT1.

کلمات کلیدی:

Cellular senescence, Diabetes, Diabetes Complications, Endothelial cells, Garcinia mangostana, Hyperglycemia, Mangostin, metabolic syndrome

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