Meetings International SciTechnol

Mohamed M Elseweidy, Int J Cardiovasc Res 2018, Volume:7
DOI: 10.4172/2324-8602-C4-013

ANNUAL CARDIOLOGISTS MEETING

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2nd International Conference on

DENTAL & ORAL HEALTH

November 26-27, 2018 | Madrid, Spain

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Therapeutic potential of 10-DHGD and/or Pentoxifyllin against aorta calcification in high dietary cholesterol-fed rabbits

The present study aimed to investigate the inhibitory effects of 10-dehydrogingerdione (10-DHGD) and pentoxifylline (PTX) either individually or in combined form on calcium deposition in high cholesterol diet (HCD)-fed rabbits as compared to atorvastatin (ATOR), and to clarify the underlying mechanisms. Three months old male New Zealand white rabbits received either normal chow or HCD for 12 weeks. The latter group was subdivided into five groups and concurrently treated either with vehicle (dyslipidemic control), ATOR, 10-DHGD, PTX or combined 10-DHGD and PTX. Blood samples and aortic tissue were collected for biochemical and histological analyses. HCD-fed rabbits displayed dyslipidemia, inflammation, atherosclerotic lesions and calcium deposition in aortas as compared to normal group. This was associated with up-regulation of bone morphogenetic protein-2 (BMP-2), wingless-type MMTV integration site family 3A (Wnt3a) mRNA levels and osteopontin (OPN) expression in their aortic tissue, along with higher serum alkaline phosphatase (ALP) and osteocalcin (OCN) levels. Furthermore, a marked decrease in osteoprotegerin (OPG), along with a significant increase in receptor activator of NF-kB (RANK) levels was found in aortic tissue of dyslipidemic rabbits. 10-DHGD and PTX monotherapy significantly modulated the afore-mentioned calcification markers and attenuated aortic calcification to greater extent than ATOR. Combination of 10-DHGD and PTX exerted more anti-calcifying effect than either individual drug. Our findings suggested therapeutic roles of 10-DHGD and PTX against aortic calcium deposition in dyslipidemic rabbits, likely mediated by HDL-raising effect and attenuation of associated inflammation. Combination of 10-DHGD and PTX may represent a promising therapeutic strategy for aortic calcification associated with atherosclerosis.

Biography

Mohamed M Elseweidy has completed his PhD at the age 35 years from faculty of pharmacy - Cairo University and Postdoctrat studies from Medical College of Georgia - Augusta GA- USA. He has published more than 70 papers in reputed journals and has serving as Editorial Board member of certain journals. He is a Professor of clinical Biochemistry and Clinical nutrition and a supervisor of Research Team Members in the faculty of Pharmacy - Zagazig University, Egypt. His field of interests are Diabetic complications and Hyperlipidemia, Natural Antioxidants and their applications in Hyperlipidemia and Diabetic nephropathy, Gastritis, Role of Helicobacter pylori and Natural products as Therapeutic agents

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