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TITLE

Anti-apoptotic Effects of Exercise Training on Diabetic Hearts

Chih-Yang Huang[1,2], Fen-Ni Wu[1], James A Lin[1], Shin-Da Lee[3] and Wei-Wen Kuo[4]

[1]Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan;

[2]Department of Health and Nutrition Biotechnology, Asia University, Taichung, Taiwan

[3]Department of Physical Therapy, Graduate Institute of Rehabilitation Science, China

Medical University, Taichung, Taiwan;

[4]Department of Biological Science and Technology, China Medical University, Taichung, Taiwan, R.O.C.

Cardiac apoptosis was found in diabetes but very limited information regarding the influence of exercise training on cardiac apoptosis in diabetes was available. The purpose of this study was to evaluate the influence of exercise training on cardiac relative pathways. Forteen Wistar rats (Control) and nine Streptozotocin-induced diabetic rats (DM) at 4 month of age were served as negative and positive control and eleven Streptozotocin-induced diabetic rats underwent running exercise on treadmill 1 hour daily, 5 sections per week, for 8 weeks (DM-EX). After exercise training or sedentary status, the excised hearts were measured by H&E stain, TUNEL assays and Western Blotting. Citrate synthase activity in skeletal muscle in DM-EX is significantly increased compared with sedentary group (Control and DM). Protein levels of Fas and mitochondria dependent apoptotic pathways, including Fas ligand, Fas death receptors, Fas-associated death domain (FADD), activated caspase-8 (Fas), t-BID, BAD, cytochrome C, activated caspase-9 (mitochondria) and activated caspase-3 were increased in DM group compared with control. These protein levels and cardiac TUNEL-positive apoptotic cells were decreased in DM-EX group compared with DM group. Exercise training suppressed Fas-dependent and mitochondria-dependent cardiac apoptotic pathways in diabetic hearts. Our findings demonstrate new therapeutic effects of exercise training on diabetic hearts for preventing apoptosis.

Biography

Dr. Chih-Yang Huang received his B.Sc. and M.Sc. degrees from Fu-Jen U. and Yang-Ming Medical University,Taipei, Taiwan and his Ph.D. from the Institute of Molecular Physiology, University of Illinois, Urbana, USA from 1992-1998. He was also a Post. Doc at the University of Illinois, Urbana, USA from 1998-1999. He applied as an Assistant Professor of Chung-Shen Medical U. of Taichung, Taiwan from 1999-2002, and then appointed as a full Professor in October 2005. His major area of research is related to 1. Anti-oncology mechanisms of estrogen and estrogen receptors on Liver, colon and oral cancers. 2. Cardiac survival and apoptosis signalings of insulin-like growth factor I and II receptors, and the protective mechanisms of estrogen and estrogen receptors on cardiac myocytes. He currently holds 7 Grants from NSC of Taiwan, and couple grants from the clinical heart association. He published 150 peer reviwed papers and 163 published abstracts. He is currently the associate editor of The Chinese Journal of Physiology, the Mid-Taiwan Journal of Medicine and the BioMedicine. He is also the editoral board member of Adaptive Medicine Journal and manuscript reviewer of number of major journals.