Study on the anti-inflammatory effects of an herbal formula

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Abstract

Introduction: Many herbal formulae in Chinese Medicine are believed to have anti-inflammatory effects suitable for pain control in arthritic conditions Er-Miao-San (EMS) is a traditional Chinese herbal formulation that contains combinations of Rhizoma Atractylodis (RA) and Cortex Phellodendri (CP). It exhibits analgesic and anti-inflammatory activities and have been used for the treatment of various painful conditions for thousand years in China. The aims of the present study were to investigate the anti-inflammatory activities of EMS and elucidate the underlying mechanisms with regard to its molecular pathway of action.

Methods: The anti-inflammatory effects of EMS were studied by using lipopolysaccharide (LPS)-stimulated activation of nitric oxide (NO) and pro-inflammatory cytokine production in mouse RAW264.7 macrophages. Expression of inducible NO synthase (iNOS), mitogen-activated protein kinases (MAPKs) phosphorylation, p65 phosphorylation, inhibitor-κBα (IκBα) degradation, and NF-κB DNA- binding activity were further investigated.

Results: The study demonstrated that EMS could suppress the production of NO in LPS-stimulated RAW264.7 macrophages. However, CP or RA alone did not have significant inhibitory effect on them. EMS also inhibited the production of tumor necrosis factor-alpha, interleukin-1beta and macrophage chemotactic protein1. Further investigations showed EMS could suppress iNOs expression and p38 phosphorylation. EMS significantly decreased the content of IκBα, reduced the level of phosphorylated p65 and suppressed the NF-κB DNA-binding activity. All these results suggested the inhibitory effects of EMS on the production of inflammatory mediators through the inhibition of the NF-κB pathway.

Discussion: Our results indicated that EMS inhibited inflammatory events and iNOS expression in LPS- stimulated RAW264.7 cells through the inactivation of the MAPK and NF-κB pathway. This study gives scientific evidence validating the use of EMS in treatment of patients with rheumatoid-like arthritic conditions, as a supplement to standard medications.

Biography

PC Leung, OBE, JP, Hon DSSc, DSC, MBBS, MS, FRACS, FRCS (Edin), FHKCOS, FHKAM (Orth); is Emeritus Professor of Orthopedics & Traumatology, Faculty of Medicine; Director of Centre for Clinical Trials on Chinese Medicine, Institute of Chinese Medicine; Director, The Hong Kong Jockey Club Centre for Osteoporosis Care and Control, The Chinese University of Hong Kong, 1996-2013; Director, Partner State Key Laboratory of Phytochemistry and Plant Resources in West China (The Chinese University of Hong Kong). He is also the Past President of the International Research Society of Orthopedic Surgery and Traumatology (SIROT), 2009-2012. His research areas include Orthopaedics, Osteoporosis, Microsurgery Health, Traditional Chinese Medicine and General Education. He is also the author of over 800 scientific manuscripts in journals and 27 books. Examples of publication related in Chinese medicine

include: "*A Comprehensive Guide to Chinese Medicine*", "Book in preparation: A Scientist View on Traditional Chinese Medicine", "Limb Salvage for Diabetic Ulceration with Traditional Chinese techniques", "Treatment of Low Back Pain with Acupuncture" etc. In addition, he has also been appointed as editor of 11 International journals since 1982.

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