

IMPACT OF CAPSAICIN ON MAST CELL INFLAMMATION

S. FRYDAS¹, G. VARVARA², G. MURMURA², A. SAGGINI³,
A. CARAFFA⁴, P. ANTINOLFI⁴, S. TETÈ², D. TRIPODI², F. CONTI⁵, E. CIANCHETTI⁶,
E. TONIATO⁷, M. ROSATI⁵, L. SPERANZA⁸, A. PANTALONE⁹, R. SAGGINI¹⁰,
L.M. DI TOMMASO¹¹, T.C. THEOHARIDES¹², P. CONTI⁷ and F. PANDOLFI¹³

¹Parasitology Department, Veterinary School, Thessaloniki University, Greece; ²Dental School, University of Chieti-Pescara, Italy; ³Department of Dermatology, University of Rome Tor Vergata, Rome, Italy; ⁴Orthopaedics Division, University of Perugia, Italy; ⁵Gynecology Clinic, Pescara Hospital, Pescara, Italy; ⁶Surgery Division, Ortona Hospital, Ortona, Italy; ⁷Immunology Division, Medical School, University of Chieti-Pescara, Italy; ⁸Department of Human Movement Science, University of Chieti-Pescara, Chieti, Italy; ⁹Orthopedic Division, University of Chieti-Pescara, Italy; ¹⁰Department of Neuroscience and Imaging, University of Chieti-Pescara, Italy; ¹¹Laboratory Medicine, University of Chieti-Pescara, Italy; ¹²Department of Pharmacology and Experimental Therapeutics, Biochemistry and Internal Medicine Tufts University School of Medicine, Tufts-New England Medical Center, Boston, MA, USA; ¹³Department of Internal Medicine, Catholic University of the Sacred Heart, Rome, Italy

Received June 18, 2013 – Accepted July 25, 2013

Mast cells are inflammatory cells, and they are prominent in inflammatory diseases such as allergy and asthma. Mast cells possess high-affinity receptors for IgE (FcεRI) and the cross-linking of these receptors is essential to trigger the secretion of granules containing arachidonic acid metabolism [such as prostaglandin (PG) D₂, leukotriene (LT) B₄, and LTC₄], histamine, cytokines, chemokines, and proteases, including mast cell-specific chymases and tryptases. Activation of mast cells provokes the secretion of cytokines and mediators that are responsible for the pathologic reaction of immediate hypersensitivity. Sensory nerve stimulation by irritants and other inflammatory mediators provokes the release of neuropeptides, causing an increase in vascular permeability, plasma extravasation and edema. Trigeminal nerve stimulation activates dura mast cells and increases vascular permeability, effects inhibited by capsaicin. Capsaicin causes release of sensory neuropeptide, catecholamines and vasodilation. Several studies have reported that capsaicin is effective in relief and prevention of migraine headaches, improves digestion, helps to prevent heart disease, and lowers blood cholesterol and blood pressure levels. The findings reported in these studies may have implications for the pathophysiology and possible therapy of neuroinflammatory disorders.

Copyright of International Journal of Immunopathology & Pharmacology is the property of BIOLIFE, s.a.s. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.