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Curry Component Cools Inflamed Joints of Rats

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October 30, 2006

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TUCSON, Ariz. Oct. 30 -- The curry ingredient turmeric may have some potential in rheumatoid arthritis treatment, according to research on rats.

Turmeric, which gives curries their characteristic yellow-orange tinge, is a major dietary source of curcumin. Turmeric extracts have been touted by Ayurvedic and alternative medicine supporters, albeit with scant scientific backing, for a purported ability to ease the inflammation of RA.

Those alternative medicine supporters may be onto something, reported Janet L. Funk, M.D., of the University of Arizona here, and colleagues, in the November issue of *Arthritis & Rheumatism*.

In animal models of RA, a curcumin-containing turmeric extract was found to be a significant inhibitor of joint inflammation and peri-articular joint destruction in a dose-dependent fashion, the investigators reported.

The turmeric extract inhibited the transcription factor nuclear factor-kappa B (NFκB) in vascular endothelium and synovial cells in joints affected by RA, and interfered with expression of key inflammatory genes that are activated by NF-κB.

The finding suggests that NF-κB inhibition may be an important mechanism of turmeric's protective effect against arthritis, the authors stated.

"Just as the willow bark provided relief for arthritis patients before the advent of aspirin, it would appear that the underground stem (rhizome) of a tropical plant may also hold promise for the treatment of joint inflammation and destruction," they wrote.

In an investigation of whether there was scientific evidence to back claims for turmeric's effects on RA, the authors first used high-performance liquid chromatography to determine the composition of commercially available turmeric supplements, and created a chemical copy of the extract.

They then gave the compound intraperitoneally into female Lewis rats either before or after the onset of streptococcal cell wall-induced arthritis.

The investigators looked for signs of the compound's ability to prevent joint swelling and destruction with clinical examinations, histological studies, and bone mineral density measurements.

To pinpoint the mechanism of action, they analyzed turmeric's effect on articular transcription factor activation, conducted microarray analysis of articular gene expression, and verified the physiologic effects of alterations in gene expression.

Action Points

- Explain to patients that turmeric, an ingredient commonly found in curries and other Asian foods, appears to contain chemicals that help to dampen the inflammatory effects of rheumatoid arthritis.
- Explain that the study reported here was performed only in rat models of arthritis, and that studies of turmeric extracts in humans have not been performed.

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They found that the compound, primarily turmeric with curcumin but without essential oils, inhibited both joint inflammation and joint destruction in a dose-dependent fashion.

"In vivo treatment prevented local activation of NF- κ B and the subsequent expression of NF- κ B-regulated genes mediating joint inflammation and destruction, including chemokines, cyclooxygenase 2, and RANKL [the receptor activator of NF- κ B ligand]," the investigators wrote.

Those findings were supported by the histology studies, which showed that turmeric inhibited inflammatory cell influx, levels of prostaglandin E2 in joints, and periarticular osteoclast formation.

"These translational studies demonstrate in vivo efficacy and identify a mechanism of action for a well-characterized turmeric extract that supports further clinical evaluation of turmeric dietary supplements in the treatment of RA," Dr. Funk and colleagues wrote.

They cautioned that both additional preclinical and clinical studies need to be performed before recommendations about the use of turmeric extracts or other botanicals for rheumatoid arthritis can be made.

Additional Arthritis Coverage

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Primary source: Arthritis & Rheumatism

Source reference:

Funk JL et al. "Efficacy and Mechanism of Action of Turmeric Supplements in the Treatment of Experimental Arthritis." *Arthritis & Rheumatism*. 54;11:3452-64.

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