O-28: TURMERIC SUPPLEMENTS FOR ARTHRITIS TREATMENT: TRANSLATIONAL INVESTIGATION OF MECHANISM AND EFFICACY

J.L. Funk,[1] J.A. Beischel-Frye,[1] J.N. Oyarzo,[1] N. Kuscuoglu,[2] P.R. Kiela,[2] S.D. Jolad,[3] and B.N. Timmermann[3]
[1]Departments of Medicine and [2]Pediatrics, University of Arizona; [3]Department of Medicinal Chemistry, University of Kansas

Objective: While turmeric dietary supplements are promoted for arthritis treatment, scientific evidence of efficacy is lacking. An animal model of rheumatoid arthritis was used to determine the efficacy and mechanism of action of turmeric. Methods: A turmeric extract similar in composition to commercial supplements was isolated for treatment of female Lewis rats with streptococcal cell wall (SCW)-induced arthritis. Efficacy was determined and mechanism of action was elucidated by analysis of transcription factor activation, microarray analysis of articular gene expression, and verification of the physiologic effects of these alterations. Results: Turmeric extract profoundly inhibited inflammation and peri-articular joint destruction, preventing NF-κB activation and the subsequent expression of NF-κB-regulated genes including chemokines, COX-2, and RANKL, the pivotal gene regulating osteoclast-mediated bone destruction. Consistent with this, inflammatory cell influx, increased PGE2, and peri-articular osteoclast formation were also prevented. Conclusions: These results provide the first in vivo evidence of possible anti-arthritic, bone-protective effects of turmeric supplements mediated by inhibition of NF-κB.