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**File: ■ Turmeric (*Curcuma longa*)**
**■ Osteoarthritis**
**■ Polysaccharides**

**HC 021321-467**

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**RE: Polysaccharide Extract of Turmeric Benefits Patients with Painful Osteoarthritis of the Knee**

Madhu K, Chanda K, Saji MJ. Safety and efficacy of *Curcuma longa* extract in the treatment of painful knee osteoarthritis: a randomized placebo-controlled trial. *Inflammopharmacology*. December 16, 2012; [epub ahead of print]. doi: 10.1007/s10787-012-0163-3.

Osteoarthritis (OA) is a common joint ailment, affecting 20 million people in the US, and is expected to grow 66-100% in the next 20 years. Both glucosamine sulfate (GS) and turmeric (*Curcuma longa*) have been researched and used as natural treatments for the condition; however, a special extract of turmeric, the polar fraction containing polysaccharides, has not been tested for its anti-inflammatory and analgesic properties in this population. This randomized, single-blind, placebo-controlled, multi-arm trial assessed the analgesic and anti-inflammatory properties of this special polar turmeric extract (NR-INF-02) in patients with knee OA in comparison to placebo, GS alone, and its combination with GS.

NR-INF-02 is derived from the rhizome of turmeric, and is registered as Turmacin™ (Natural Remedies Pvt. Ltd.; Bangalore, India). It is supplied as 500 mg in a gelatin capsule, containing 12.6% w/w polysaccharides, but free of curcuminoids.

Patients with clinical and radiological evidence of knee OA, who had pain for more than 6 months, were included. Those with concurrent conditions or a history of clinically significant trauma/surgery in the knee area were excluded. Patients (n=120; 37 males and 83 females) were randomly assigned to 1 of 4 of the following groups: 1000 mg/d of NR-INF-02, 800 mg/d of placebo (microcrystalline cellulose), 1500 mg/d of GS, or the combination of 1000 mg/d of NR-INF-02 plus 1500 mg/d of GS. All treatments were given in 2 divided doses. Patients and the orthopedic examiner were blinded, but investigators were not. Acetaminophen was allowed at doses of 2000-4000 mg as a rescue medication, but not in the 24 hours before test days. Narcotic analgesics and nonsteroidal anti-inflammatory drugs (NSAIDs) were not permitted during the study period.

The primary outcome measures were a decrease in the severity of pain symptoms (as assessed by Visual Analog Scale [VAS]) and the knee function (as assessed by the Western Ontario and McMaster Universities Osteoarthritis Index [WOMAC] scale). A clinical examination of the knee was performed by an orthopedic specialist using the Clinician Global Impression Change (CGIC) scale. All assessments were made at baseline, day 21, and day 42.

There was no significant difference in the demographic, anthropometric, or clinical characteristics between the 4 treatment groups at baseline, except for gender distribution (P=0.03; significantly more women in the GS and NR-INF-02 plus GS groups) and the prior intake of NSAIDs (P=0.019; greater in the placebo and NR-INF-02 plus GS groups).

VAS scores were significantly reduced for both NR-INF-02 alone and GS alone on both days 21 and 42 compared to placebo and to the combination (P<0.05 for all). WOMAC scores were significantly decreased for NR-INF-02 alone compared to placebo and to the NR-INF-02 plus GS combination on both days 21 and 42 (P<0.05 for all). There was no significant difference between NR-INF-02 and GS. CGIC scores for NR-INF-02 and for the combination were significantly lower than for both placebo and GS at both days 21 and 42 (P<0.05 for all). There was a significant interaction effect between the 4 study groups and time for VAS, WOMAC, and CGIC (P<0.01).

By the end of the trial, the number of patients complaining of joint tenderness in the NR-INF-02 group was significantly reduced by 86.2% compared to the other groups (P<0.01). Both NR-INF-02 and NR-INF-02 plus GS significantly decreased joint crepitus by approximately 37% (P<0.01). For joint effusion and terminal limitation of joint movement, there was a significant decrease for all treatments compared to placebo (P<0.01 for all).

The use of rescue medication (a secondary outcome measure) was significantly less only in the NR-INF-02 group when compared to placebo (P<0.01). Patient acceptability was highest for NR-INF-02, followed by GS, the combination of NR-INF-02 plus GS, and placebo (93.1, 83.3, 67.9, and 60%, respectively). Adverse events were mild and occurred across all 4 groups.

NR-INF-02 was shown to decrease pain and improve function over a period of 42 days using standard scales for measurement. That NR-INF-02 in combination with GS did not have similar or better effects was surprising to the authors, but they noted that GS may not have anti-inflammatory benefits in only 42 days, since other studies have tested GS for a period of 6 months. Limitations of this study were its small sample size, single-blindedness, short duration, and use of subjective measures as outcomes. Future studies could look instead at preventing progression of structural damage. Nonetheless, the results of this study support the use of NR-INF-02 for treatment of painful OA of the knee and for reducing analgesic and/or NSAID use and the associated risk of adverse events.

*—Risa Schulman, PhD*

The American Botanical Council has chosen not to reprint the original article.