

Flavonoid supplement shown to reduce swelling after total knee arthroplasty

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For patients undergoing total knee arthroplasty (TKA), treatment with diosmin—a flavonoid supplement derived from citrus fruits—reduced

swelling of the knee and leg and some measures of associated pain can be achieved, [reports a clinical trial](#) in *The Journal of Bone & Joint Surgery*.

"The use of diosmin after TKA reduced lower-extremity swelling and pain during motion and was not associated with an increased incidence of short-term complications involving the outcomes studied," according to the new research by Pengde Kang, Ph.D., MD, of Sichuan University, Chengdu, China, and colleagues.

Possible new approach to alleviate painful swelling after TKA

Swelling is a common problem in patients undergoing TKA, and one that contributes to pain and patient dissatisfaction. "Postoperative lower-extremity swelling is a major hindrance to the enhanced recovery of patients undergoing TKA," the researchers write. Various measures have been proposed to decrease swelling, including rest, cold packs, and compressive bandages, with mixed success. Currently, there are no effective medication choices to reduce swelling after TKA.

Diosmin—often in combination with a related flavonoid called hesperidin—has been used to reduce swelling of the limbs in patients with venous disorders. Although diosmin is not approved as a [prescription medication](#) in the United States or Europe, experience suggests that it is well tolerated with low toxicity. Based on these characteristics, the researchers designed a clinical trial to evaluate the effectiveness and safety of diosmin in patients undergoing TKA.

The exploratory study included 330 patients undergoing TKA at 13 university-affiliated hospitals. Patients were randomly assigned to either a treatment group, receiving a 14-day course of diosmin starting

postoperative day 1; or to a [control group](#), receiving no study treatment. Both groups received standard pain medications.

Swelling at specific locations was measured at 1, 2, 3, and 14 days postoperatively and compared between the diosmin and control groups. Pain scores, [knee](#) function, complication rates, and blood levels of certain inflammatory markers (C-reactive protein and interleukin-6) were also assessed.

Diosmin reduces swelling and pain scores with movement

The results showed reduced swelling at the knee, calf, and thigh up to 14 days after TKA in patients assigned to diosmin. The reduction in swelling was associated with lower pain scores on knee movement. In contrast, pain scores at rest were not significantly different for the diosmin versus control groups. Assessments of knee function recovery and levels of inflammatory biomarkers were similar as well.

Short-term complication rates were also similar between groups, supporting the safety of diosmin. There was a trend toward decreased rates of postoperative nausea and vomiting with diosmin, although the difference was not significant.

The study provides preliminary evidence that diosmin is a safe and effective treatment to reduce swelling and [pain](#) with movement after TKA. However, questions remain as to how diosmin exerts these effects—particularly since the study finds no change in inflammatory biomarker levels between groups.

"This negative result may reflect the efficacy of the other anti-inflammatory drugs that were administered to both groups," Dr. Kang

and colleagues write. They emphasize the need for further studies to assess the mechanism by which diosmin reduces swelling, and whether some alternative dosing regimen might be more effective.

More information: Qiuru Wang et al, Efficacy of Diosmin in Reducing Lower-Extremity Swelling and Pain After Total Knee Arthroplasty, *Journal of Bone and Joint Surgery* (2023). [DOI: 10.2106/JBJS.23.00854](https://doi.org/10.2106/JBJS.23.00854)

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