IL-3 PREVENTS INFLAMMATORY ARTHRITIS

Interleukin (IL)-3, an important regulator of hematopoiesis, inhibits tumor necrosis factor (TNF)-induced bone resorption in vitro and prevents inflammatory arthritis *in vivo*, a study by Yogesha *et al.* reveals.

The researchers have previously reported that IL-3 inhibits osteoclast differentiation induced by receptor activator of nuclear factor-κB ligand (RANKL) or TNF, but the role of this interleukin in bone resorption was unknown until now. In the current study, Yogesha and colleagues studied the role of IL-3 in TNF-induced bone resorption in vitro by use of purified osteoclast precursors on bone slices. They found that IL-3 is a powerful and irreversible inhibitor of TNF-induced bone resorption, even in the presence of other proinflammatory cytokines, such as IL-1α, transforming growth factor β1, transforming growth factor β3, IL-6 and prostaglandin E2. This inhibition seems to be mediated at the nuclear level by prevention of TNF-induced translocation of c-fos and subsequent activation of the AP-1 transcription factor in osteoclast precursors.

In light of these findings, Yogesha and colleagues studied the *in vivo* role of IL-3 in the prevention of inflammatory arthritis in mice (induced using monoclonal antibodies to type II collagen and lipopolysaccharide), a model that shares many similarities with human rheumatoid arthritis. When pretreated with IL-3, these mice showed no signs of paw inflammation or bone or cartilage loss, and did not develop inflammatory arthritis.

"Our study in mice suggests that IL-3 has potential as a new therapy to diminish the inflammatory response and protect against cartilage and bone loss in arthritis," says senior author Mohan Wani.

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