

Platelet-Rich Plasma & Musculoskeletal Disease

Articular cartilage is responsible for providing shock absorption and lubrication to ensure painless movement of a joint. Superficial zone protein (SZP) is synthesized by the surface zone articular chondrocytes and synoviocytes in the synovium and secreted into synovial fluid. In humans, mutation of the gene that codes for SZP can cause early-onset noninflammatory joint damage and failure with a loss of superficial zone chondrocytes and other joint changes. Studies have also shown that SZP production and synovial fluid lubricity decrease after injury. Animal models suggest that maintaining or restoring cartilage lubrication may be an important component of prevention or treatment of osteoarthritis (OA).

Autologous platelet-rich plasma (PRP) has been increasingly used to treat musculoskeletal disease. Clinical studies have shown significant improvement with PRP treatment for OA compared with hyaluronan/hyaluronic acid injections and placebo. The functional mechanisms for how PRP works have been explained by its effect on inflammation and angiogenesis, as well as maintaining joint homeostasis, but the precise mechanism is unclear. This study investigated the effect of PRP on SZP production by synovium-, articular cartilage-, and anterior cruciate ligament-derived cells in vitro. PRP significantly increased SZP secretion from synovium- and articular-cartilage-derived cells. PRP also unexpectedly contained a significant amount of endogenous SZP, suggesting that PRP could function as an effective boundary lubricant for articular cartilage.

Commentary

Use of PRP is based on the presence of growth factors and cytokines in platelets, which induce cellular proliferation, migration, differentiation, and matrix

synthesis. Part of how PRP works may have to do with the ability for platelets to activate. However, different methods of collection vary based on platelet:WBC ratio and concentration of platelets in the final product, and when platelets are separated from plasma, there is a risk they may be activated in the process. Thus, the method of collection could affect the potential for healing when PRP is injected in a joint. Still, while the exact extraction method and protocol have not yet been elucidated, clinical data suggest that PRP can be useful. More studies are warranted, especially regarding potential harmful effects such as accidental intra-arterial injection of platelets.
—Heather Troyer, DVM, DABVP, CVA

Source

Sakata R, McNary SM, Miyatake K, et al. Stimulation of the superficial zone protein and lubrication in the articular cartilage by human platelet-rich plasma. *Am J Sports Med.* 2015;43(6):1467-1473.

Oclacitinib & Feline Dermatitis

Feline allergic skin disease is a common dermatological problem, with relief of pruritus the primary goal of treatment. Oclacitinib is a Janus kinase-inhibitor licensed for use in dogs to manage allergic pruritus and atopic dermatitis. The goal of this open, uncontrolled pilot study was to evaluate efficacy, safety, and ease of administration to cats with allergic skin disease.

Twelve cats, >12 months of age and

weighing >3 kg, received oclacitinib (mean, 0.47 mg/kg; range, 0.42 to 0.56 mg/kg) twice a day for 14 days, then once a day for 14 days. Response to therapy was monitored via a visual analog scale and the validated Scoring Feline Allergic Dermatitis system. All owners rated ease of administration as good or excellent. Owners rated efficacy as good or excellent in 4/12 cats, fair in 3/12, and poor in 5/12 cats. No association was noted between successful outcome and lesion type or severity, administered oclacitinib, and previous duration of disease. The drug was well-tolerated. Further research into different dosages is warranted.

Commentary

Although the findings in this study are somewhat disappointing, it is important to remember that the drug dose used was established for dogs, not cats. It is likely that the dose needed for cats is different (eg, higher and/or twice a day). The dose for cyclosporine in cats is higher (7 mg/kg) than for dogs (5 mg/kg). Not all drugs work in all patients, and that may be another factor.—Karen A. Moriello, DVM, DACVD

Source

Ortaldo C, Noli C, Colombo S, Borio S. Oclacitinib in feline nonflea-, nonfood-induced hypersensitivity dermatitis: results of a small prospective pilot study of client-owned cats. *Vet Dermatol.* 2015;26(4):235-e52.