



# self-preservation

Part of a growing shift towards using biologically based therapies to manage equine lameness, IRAP uses your horse's own blood to treat his joint disease.

*You know your horse has issues with that right front ankle, but with early detection of the problem and proper management, you were able to keep him racing sound all of last season. Coming into this year, though, you are concerned. You just aren't getting the same results from the standard joint injection treatments that worked so well before. This is a promising young horse and you don't want to give up on him, but you don't want to run him into the ground either.*

Story by Lindsay Day

## irap therapy

Thankfully, a new treatment option – IRAP – is making inroads in Canadian vet clinics and showing promising results in cases just like this. Originally developed in Germany by Orthogen Veterinary, IRAP therapy is gradually gaining



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recognition worldwide as an effective and viable treatment for equine joint disease. Unlike the standard joint injection therapies (corticosteroids, hyaluronic acid and Adequan) IRAP uses therapeutic agents produced by the horse's own body. "What you inject is 100 per cent the body's own material" explains Dr. Julio Reinecke, Managing Director of Orthogen. "That's what really sets it apart."

The treatment is based on scientific advances in understanding the molecular basis of joint disease and inflammation. "IRAP represents a more direct, biologically based approach to treating joint disease" says Dr. Serge Conninx, DVM, who offers the IRAP treatment in his Peterborough, Ontario clinic. "You are trying to address the problem where it starts."

In a healthy joint there is a happy balance between molecules that encourage the building and regeneration of tissues, on the one hand, and molecules that promote the destruction and removal of worn out materials, on the other. With inflammation and joint disease, however, the demolition crew gets carried away, wreaking havoc inside the joint. The IRAP method works by attempting to restore a better balance between these two camps.

The process involves taking a collection of blood from the horse and incubating it in a syringe or vial containing specially treated glass beads. This stimulates the blood cells to produce high levels of two types of proteins – those that help out the building crew (called growth factors) and those that block the action of the out-of-control clean-up crew (the anti-inflammatory cytokines).

One of the most important molecules in this latter category is called *interleukin-1 receptor antagonist protein*, from which IRAP gets its name. It blocks the action of *interleukin-1*, a key molecule involved in beginning the whole inflammation process that leads to joint degeneration. Researchers now know more about the types and levels of the different molecules that are up-regulated by the IRAP system, but research is still ongoing.

"What we do know is that it works," says Dr. David Frisbie, Associate Professor and researcher at Colorado State University. In 2004, he and his colleagues at the Equine Orthopaedic Research Centre completed a controlled study to evaluate the IRAP method. "There are two things of concern when we look at a treatment in joint disease. The symptom modifying effects – does it make the horse feel better? And, the disease modifying effects – does it slow down the progression of arthritis? And we found IRAP did both."

The standard treatment protocol for IRAP therapy typically involves an initial series of three joint injections given every seven to ten days. Follow-up injections are given as required, anywhere from once a month to once a year, depending on the horse's condition. One 50-60 ml collection of blood from the horse typically yields four to six doses of the IRAP serum, depending on the size of the joint being treated. After processing, doses not used for immediate injection are frozen and banked for future use. The whole treatment, including collection, processing and injections, typically costs between \$800 and \$1,200.

Given the high cost of the product and the need to commit to a series of treatments at the outset, IRAP is not often pursued as a first-line treatment option. There are, however, a number of significant indications of its usefulness.

McKee-Pownell Equine Services has been offering IRAP therapy for two years. "We use it primarily on horses that are failing to respond to other therapies or in cases that are showing a diminishing response," says Dr. Melissa McKee, DVM. "We've definitely found IRAP to have an advantage in terms of effectiveness, where nothing else has worked and it has."

"Certainly when other treatments are not working, this one tends to work well in the face of that," agrees Frisbie. He

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believes that this may be due to some of the proteins in the IRAP serum working down different molecular pathways than those affected by the standard treatments.



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In addition, IRAP use can be advantageous in cases where the use of steroids is an issue for a horse, be it due to a sensitivity, metabolic disturbance or stricter regulations (as in some European countries). IRAP has also shown itself to be an effective treatment following arthroscopic surgery to remove bone chips and resolve OCD lesions.

Finally, for the high-end horse with a strenuous training and racing schedule, IRAP could be deemed an appropriate treat-

ment. “We have seen over the years that some vets use it very consistently as a prophylactic [preventative] treatment for athletes” says Reinecke. Trainer Peter Kleinhans of New York uses IRAP on a number of his top horses in this regard, including Enough Talk, who, this past October at Colonial Downs, became the first horse in history to trot a sub-1:50 mile.

Though Kleinhans describes his experiences with IRAP as ‘very positive,’ he cautions that when used in this way it can be harder to evaluate the extent to which the treatments make a difference. “I may be over-estimating how effective IRAP has been, but it seems to have kept my horses pretty sound.

“In the racing world,” he adds, “people are always looking for magic potions, and there really aren’t any. I wouldn’t call IRAP a magic potion, but it does seem to be an effective treatment.”

Reinecke agrees that IRAP is not a miracle drug. As with any joint therapy, the earlier a problem is detected and addressed, the higher the chances for a positive outcome. “Obviously no treatment is 100 per cent,” cautions Reinecke. “You always have some cases where it doesn’t work.” In later stages of osteoarthritis where there is a substantial loss of cartilage, for example, IRAP may be of little help. IRAP will also have minimal effect in joints with bone chip fragments and OCD lesions until surgery has been performed to address the underlying condition.

In terms of risks associated with the treatment, IRAP shares those that are of concern any time a joint is injected – possible infection and the potential for scar tissue development. As the product is completely natural to the horse’s system, however, there is no fear of an allergic reaction. The Colorado State University study found there to be no negative side effects of the treatment and during its eight years of use in clinical practice and application in over 30,000 horses worldwide, no adverse reactions to the product have been reported to date.

As with any treatment, a qualified veterinarian should examine the horse to determine the best course of action. Lameness issues should be properly diagnosed and the problem isolated to a given joint or joints before treatment begins. Ultimately, any number of factors can influence what treatment option is most suitable in a given situation, including the horse’s age and value, the nature and history of the condition, and future plans for the horse.

The development of more biologically based therapies has been a growing trend in new treatment options for equine lameness. Founded on a growing understanding of how the body works in both health and disease, new treatments are being developed that are able to take advantage of the body’s own natural healing mechanisms. Proving itself both in the lab and in clinical practice, IRAP represents a promising treatment option for equine joint disease. “IRAP is not going to replace existing treatments for the joint,” says Reinecke, “but it is a very valuable addition to what is out there.” **T**

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