

Arthritis

Arthritis is a debilitating condition resulting in lameness and potential loss of use for many horses. The exact cause of equine arthritis is unknown, however there are many pre-disposing factors that help to contribute to the condition.

Pre-Disposing Factors For Equines Suffering From Arthritis:

Conformation
Trauma or repetitive use
Infection
Nutrient deficiencies
Repetitive joint injections

What is Arthritis?

Arthritis by definition is inflammation within the joint. Osteoarthritis (OA) is the more appropriate term and indicates inflammation within the joint and involving the bone. A joint is an area where two bones meet, such as the fetlock region. Each of the bone ends is covered by articular cartilage and the region is encased by a tissue called the joint capsule. The purpose of the joint capsule is to essentially hold or contain joint fluid within the area, whose purpose is to lubricate the joint and thus reduce friction as the bone ends glide across one another. There are many joints in the horse, but generally arthritis afflicts those joints from the carpus (knee) and tarsus (hock) proximally to the distal joints further down the limb. In cases of OA, the articular cartilage begins to degenerate or breakdown, leaving defects on the gliding surface. These defects then begin to expose the underlying bone, which when irritated, can trigger pain for the animal. During the process of cartilage degradation, various inflammatory proteins are released into the joint fluid, such as prostaglandin E-2 (PGE-2), matrix metalloproteinases (MMP-9) and interleukin-1 (IL-1). These inflammatory proteins further stimulate inflammation, leading to more cartilage loss, joint capsule irritation and pain for the horse.

Therapeutic Options to Treat Equine Arthritis:

There are many current therapy options for the horse owner and many are dependent on the stage of the osteoarthritis. Options for treatment include:

Non-steroidal antiinflammatories (bute)
Steroids (oral or intra-articular)
Topical non-steroidals (Surpass™)

Hyaluronic Acid (intravenous or intra-articular)
Polysulfated glycosaminoglycans (Adequan™)
Shock wave therapy
Stem cell therapy
I.R.A.P therapy
Surgical intervention

The end goals of any therapy is to reduce the associated inflammation within the joint and therefore slow the degradation process. Many supplements are aimed at providing the building blocks of the articular cartilage, such as chondroitin sulfate and glycosaminoglycans. Others are strictly targeted at reducing inflammation, with some being more effective than others.

Causes of Joint Inflammation:

Inflammation is a complicated process. During this event, various cells secrete inflammatory proteins called cytokines into the bloodstream or local environment. These cytokines act as signals to other cells, telling them what to do and how to act. In most instances of inflammation, such as being punched in the arm, the process is short lived. The cytokines are released, causing changes in bloodflow to the region and recruiting various immune cells. The main goal of inflammation is to provide the injured area with increased nutrients to allow for healing and to “clean up” the environment of dead or dying cells as well as bacteria or viruses. This is accomplished through the secretion of cytokines but also through the release of reactive oxygen species (ROS) by the immune cells. The ROS serves the purpose of being a toxic metabolite capable of causing cellular damage or even death. Again, in most acute cases of inflammation, this process is short lived. The problem comes when the process fails to end and continues without ending. When this occurs, the cytokines and ROS lead to continued cellular irritation, damage and potentially death. This leads to long term pain, joint capsule irritation as well as articular cartilage degeneration. In response to the cartilage degeneration, the body begins to lay down or deposit calcium in the form of bone spurs or osteophytes, with the end goal of trying to stabilize and unstable area. These bone spurs then lead to decreased range of motion and further irritation within the joint. The process then becomes a vicious circle for the patient. Research has documented these changes and occurrences within the joint. Three main cytokines have been documented to be closely associated with osteoarthritis: PGE-2, MMP-9 and IL-1. All three of these proteins serve to either aid the inflammatory process or lead to cartilage degeneration.

****IN ORDER FOR A PRODUCT TO BE EFFECTIVE AGAINST THE CLINICAL SIGNS OF ARTHRITIS, IT MUST REDUCE THESE INFLAMMATORY MEDIATORS, INCLUDING REACTIVE OXYGEN SPECIES.****