

## **JOINT DISEASES & OMEGA 3**

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Recent research into human arthritis has demonstrated the importance of omega-3 fatty acids in reducing pain and inflammation in patients with rheumatoid arthritis, osteoarthritis, gouty arthritis and spondyloarthritis. The results show consistent and reproducible beneficial effects of omega-3 fatty acids on bone metabolism and bone/joint diseases.

The clinical benefits of dietary supplementation with omega-3 polyunsaturated fatty acids have been recognized for a number of years. Supplementation with omega-3 but not omega-6, reduced the activity of enzymes involved in cartilage degradation and degenerative joint disease, slowing disease progression and inflammation.

Omega 3 fatty acids have a central role in the maintenance of a healthy body and in the management and prevention of many 'modern' disease states. However, the centuries of dietary change in human and animal nutrition have had many repercussions – including a reduction in the intake of the essential omega 3 fatty acids.

Omega 3 oils modulate cell wall flexibility, immune function, inflammatory responses and are a potent source of anti-oxidants. Clinical investigations in man and animals have demonstrated a reduction in cholesterol, clotting abnormalities and blood pressure when Omega 3 oils are returned to the diet.

In horses, Omega 3 deficiency is involved in hoof problems such as shelly feet and in the incidence of allergic skin conditions. Other common deficiencies causing poor hoof quality include zinc, methionine and biotin, but if the problem is related to insufficient omega-3 oils in the diet, supplementation is necessary. Feeding Omega 3 oils for 6 weeks to horses with Queensland itch led to a reduction in the severity of the itch and inflammation. Analysis of the hair found a concurrent decrease in the amount of omega 6 fatty acids in the hair of horses receiving the supplement and no negative side-effects occurred.

Importantly for the thoroughbred racehorse, omega-3 oils have been shown to have an important role in the structure and formation of the wall of the red blood cells – conferring upon them increased suppleness and flexibility. This red cell flexibility is advantageous during exercise - the more flexible the red blood cells the more easily and efficiently they pass through the narrow capillaries in the lungs and muscles, making oxygen uptake and delivery and waste product removal, more efficient. Human athletes on omega-3 supplemented diets, report improved performance times and less delayed muscle soreness and this is attributed to better oxygen delivery, higher levels of anti-oxidants and the protective affect omega 3 oils have against inflammation.

The tissues of wild horses and wild plants contain higher amounts of Omega-3 fatty acids compared to domesticated or cultivated ones. So where have the omega-3 fatty acids gone? Blame it on increased consumption of grains, corn and sunflower oils. Modern equine diets are high in omega-6 grains instead of omega-3-rich range grasses. In addition, over the past 200 years, there have been major changes in the genetic characteristics of grains.

It takes a long time for the body to catch up with dietary change and it is essential, in the process of returning Omega-3 fatty acids into the food supply, that the balance of omega-3:omega-6 fatty acids in the diet that existed during evolution, is maintained. Flaxseed oil has a high percentage of omega-6 fatty

acids as well as omega-3 fatty acids, and this reduces the omega-3 activity so that flaxseed oil is unable to induce the beneficial effects.

For an Omega 3 oil to be effective it must contain three critical fatty acids: Linolenic Acid, Eicosopentanoic acid (EPA) and Docosohexanoic acid (DHA). DHA is the active end point of Omega 3 metabolism in the body. Since today's diets contain fewer direct dietary sources of DHA, the body must convert omega-3 fatty acids to DHA. Dietary flaxseed oil does not provide the beneficial effects of Omega 3 supplementation due to the relatively high Omega 6 content of linseed and because it does not contain DHA and EPA. Linseed contains only linolenic acid, which the body must convert to DHA and EPA. This is an inefficient process and Omega 3 oils which only contain linolenic acid have to be fed at 5-10 times the rate, or more, to match those formulated to contain DHA and EPA. As in all matters to do with life, the question of balance is critical.