

## **OMEGA 3 OILS BENEFIT HORSE & RIDER**

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Results from ongoing studies around the world – England, Switzerland, Australia, Russia, Canada, Belgium, Italy, USA, Sweden and publications such as Experimental Biology and Medicine, Journal of Nutritional & Environmental Medicine, Journal of Veterinary Internal Medicine, European Conference in Equine Nutrition, Compendium of Continuing Education, Pferdeheilkunde, Animal Science, British Journal of Nutrition and the Canadian Journal of Veterinary Research – have collectively elucidated how omega 3 fatty acids alter biochemical and molecular processes. The data shows consistent and reproducible beneficial effects for man and animals of omega-3 fatty acids on bone metabolism, bone/joint diseases, gene expression, immuno-competence and disease resistance. 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.

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. Other studies highlight the importance of Omega 3 fatty acids in reducing pain and inflammation in patients with degenerative joint disease, rheumatoid arthritis, osteoarthritis, gout and spondyloarthritis.

Importantly for the racing thoroughbred, 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 effect omega 3 oils have against inflammation.

Omega 3 deficiency is also 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.

There are also benefits for horses at stud – after 6 weeks on an Omega 3 supplement, mares milk conferred increased immunity and resistance to infection. For the breeding stallion, a study presented at the Convention of the American Association of Equine Practitioners in 2003 showed that raising the intake of specific Omega 3 fatty acids improved the motion characteristics of cooled-stored and frozen-thawed semen. Spermatazoa from all species are high in Omega 3 fatty acids, in particular the omega 3 called docosahexanoic acid (DHA). A high ratio of DHA to omega 6 fatty acids results in enhanced fertility, whereas the reverse results in diminished fertility. Because animals are unable to synthesize omega 3 fatty acids, they must acquire them from the diet. Unfortunately, most proprietary horse feeds are very high in precursors for omega-6 fatty acids, whereas the precursors for omega-3 fatty acids, such as DHA, are very low.

The study, done in Quarter Horses, found that after 48 hours of cooling and storage, both total and progressive motility were improved by feeding a DHA-rich Omega 3 supplement. When not fed the supplement, progressive motility was approximately 50% lower than that of fresh semen, but after 14 weeks on the DHA supplement, motility was only 32% lower than in fresh semen, compared to 48% in unsupplemented stallions.

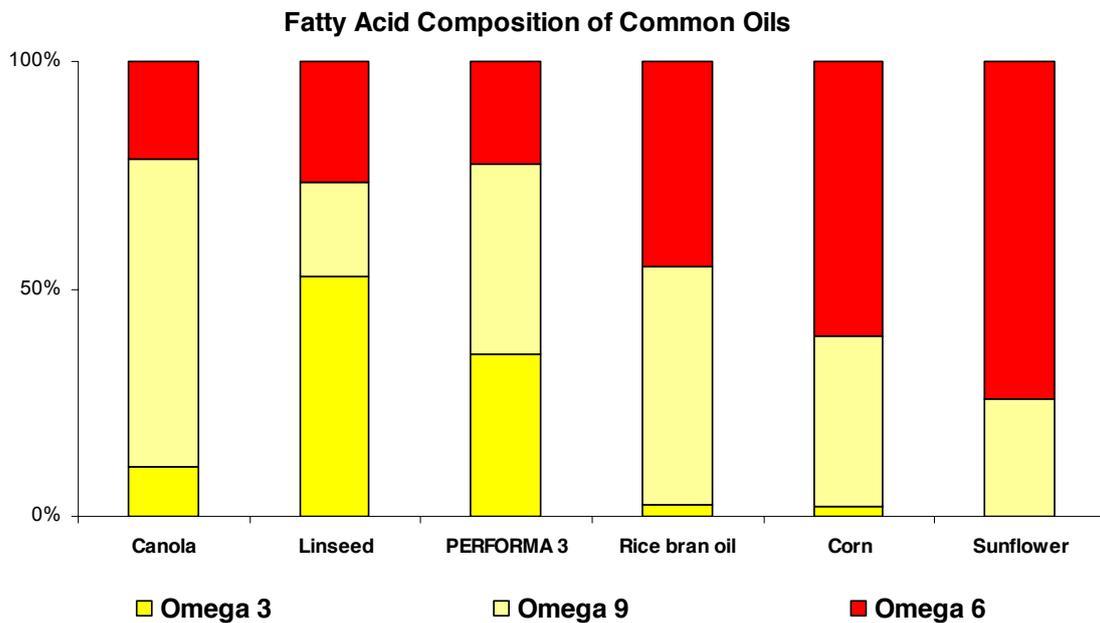
Transport of fatty acids from the diet to semen has been shown to occur in humans, poultry, pigs and rams. Vegetable oils, such as corn and soybean oil, contain high levels of omega 6 fatty acids which favours the incorporation of omega-6 fatty acids over omega-3 fatty acids. This has a negative impact on quality of stallion semen and its tolerance to cooling and freezing, because high omega 6 : DHA ratios in semen are associated with reduced sperm quality and fertility. Supplementing the stallion's diet with precursors to omega-3 fatty acids such as canola or linseed oil can increase the overall level of omega-3 fatty acids in semen, but supplementation may not result in the desired effects of improved semen quality because although these oils contain omega 3 fatty acids, they do not contain significant amounts of DHA. Neither canola nor linseed (flaxseed) oil improves the semen's tolerance to freezing. However, when a formulation containing DHA is fed, significant increases in semen quality and fertility are observed.

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 altered eating habits: 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.

Modern diets for humans and animals are largely grain-based, however the widespread use of grains is a relatively recent development. If we represent the

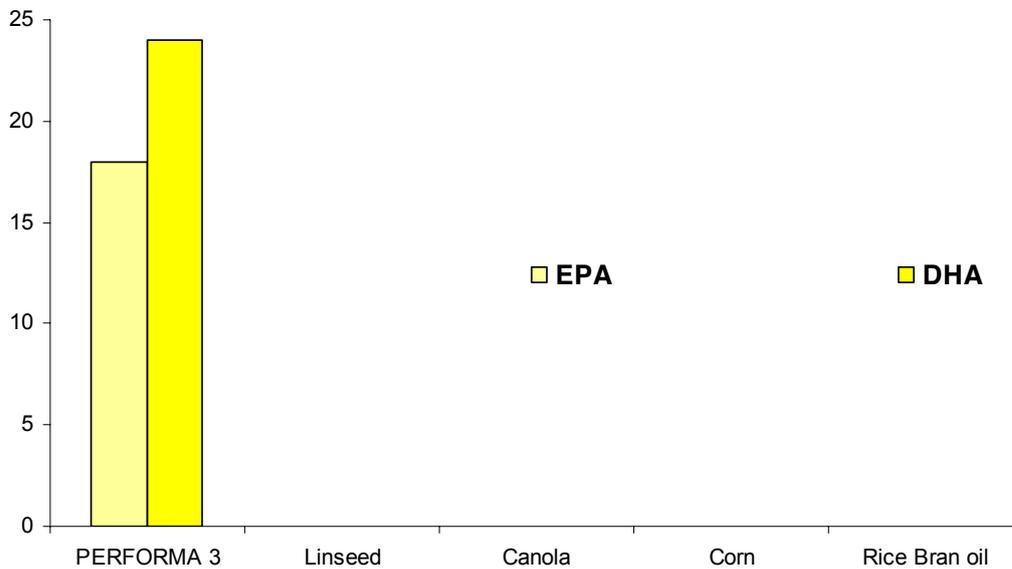
time since we evolved on earth as 24 hours, the agricultural revolution was 3 minutes ago! Prior to the agricultural revolution, diets contained very little grain or grain-based feedstuffs. The centuries of dietary change in human and animal nutrition have had many repercussions – including a reduction in the intake of the essential omega 3 fatty acids.

The data from both the scientific research and clinical studies support dietary supplementation of Omega 3 fatty acids, in particular DHA. 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 to the food supply, that the balance of Omega 6 : DHA in the diet is maintained.



Importantly, for an Omega 3 oil to be effective it must contain three critical fatty acids:  $\alpha$ -linolenic, Eicosopentanoic acid (EPA) and Docosahexanoic 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. Flaxseed oil and linseed oils do not provide the beneficial effects of Omega 3 supplementation because they do not contain the necessary amounts of DHA and EPA.

### Amount of DHA and EPA Omega 3 Fatty Acids in Oils (g/L)



Linseed contains only  $\alpha$ -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. Apart from PERFORMA 3 oil, there are no other sources of DHA and EPA except from human milk, earth worms, salmon and brain tissue – PERFORMA 3 oil has to be a better option – but don't just give it to the horses – have some yourself each day!

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