

ADD **OOMP**H WITH OMEGAS



In recent years, horse owners and veterinarians have embraced the notion of using fat in the diets of horses and ponies. Fat is scarce in forages and is therefore a seemingly unnatural feedstuff for horses, but its nutritional advantages are irrefutable. Think of this: some horses are completely relieved of painful muscle conditions when switched from a diet laden in starch to one rich in fat; other horses are more attentive to the demands asked of them by their handlers and riders when calories are provided by fat; and many insulin-resistant horses thrive on high-fat rations.

Now that the advantages of fat are accepted almost universally by horsemen, scientists are delving deeper into how certain fats help horses. Researchers have focused their attention on two distinct families of fatty acids: the omega-3 family and the omega-6 family. The omega-3 family stems from alpha-linolenic acid (ALA), and the omega-6 family originates from linoleic acid (LA). ALA and LA are considered “essential fatty acids” because they are instrumental in the life cycle, yet they cannot be manufactured in the body and must be obtained from dietary sources.

Significant members of the omega-3 family are eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Interestingly, the horse’s body can convert ALA to EPA and DHA when insufficient quantities of ALA are consumed. The lack of EPA and DHA in equine diets is understandable, as these two fatty acids are found almost exclusively in fish. The fish, namely cold-water species, are at the top of a food chain based largely on algae that manufacture EPA

and DHA. ALA, on the other hand, is found predominantly in leafy plants, more traditional components of equine diets than fish by-products (fishmeal or fish oil). Flaxseed (linseed) oil is also a rich source of omega-3 fatty acids.

The primary source of omega-6 fatty acids in the diet is LA derived from the oils of seeds and grains. Corn, sunflower, and safflower oil contain abundant quantities of LA.

The Omega-3 to Omega-6 Ratio: A Balancing Act

Omega-3 and omega-6 fatty acids must be balanced within the body in order for both to be effective. Each fatty acid is necessary for the production and distribution of a class of hormones called prostaglandins. The prostaglandins that evolve from consumption of omega-3 and omega-6 fatty acids have different effects on inflammatory processes in the body. In addition to their effects to inflammatory responses, omega-3 and omega-6 fatty acids aid in the maintenance of cell membrane stability, development and function of central nervous system tissue, oxygen transfer, and immune functions.

Scientists have not pinpointed the optimal ratio of omega-3 fatty acids to omega-6 fatty acids of horses. Even without an exact ratio, general knowledge of omega-3 and omega-6 fatty acids and typical equine management practices uncover some potentially undesirable trends.

The natural diet of horses—primarily fresh and dried forages—contains more omega-3 fatty acids than diets

consisting of a mixture of forage and cereal grains. Domesticated horses are often fed concentrated sources of energy in the form of grain meals. Grains possess more omega-6 fatty acids than forage, creating a balance of omega-3 to omega-6 fatty acids that may be inappropriate, especially when diets are high in grain. Horses that must expend high levels of energy—hardworking equine athletes such as racehorses, three-day event horses, and polo ponies—are typically fed high-grain diets. Lactating broodmares determined to be hard keepers might also fit into this category. Such diets may not include the myriad benefits of one abundant in omega-3 fatty acids.

The Benefits of Omega-3 Fatty Acids

Interest in omega-3 fatty acids has heightened among all species in recent years, and equine researchers have begun to study their effectiveness in horses and ponies. Many studies have been undertaken by universities to investigate the potential benefits of supplementation with omega-3 fatty acids, and promising results have come to light.

- Researchers discovered that omega-3 fatty acids found their way into blood plasma and into red blood cells, which may have an effect on inflammation processes.
- Reproductive specialists obtained encouraging results in studies carried out on stallions: a significant boost in

the number of normally shaped sperm and a rise in the concentration of spermatozoa in the semen.

- Nutritionists uncovered interesting results when omega-3 fatty acids were fed to pregnant mares. The mares passed along the fatty acids to their foals in their milk. These foals seemed to have a stronger immune system than foals suckling mares not fed omega-3 fatty acids.

Research is full of possibilities. As such, equine nutritionists are looking into other ways in which omega-3 fatty acids may benefit horses.

- Scientists are studying the effects of a combined dose of DHA and EPA on reducing signs of exercise-induced pulmonary hemorrhage (EIPH), pulmonary inflammation, and joint irritation.
- Researchers are recording the effects of omega-3 on estrous cycles of mares, with a possible connection to reproductive function.
- Investigators are looking into the possible antioxidant properties inherent in omega-3 fatty acids.

Long gone are the days of hay and oats. Examination of novel feed ingredients such as omega-3 fatty acids may pave the way for a brighter, healthier future for horses everywhere. ☺☺



Where to Find the Omegas

Feedstuffs have varying levels of omega-3 and omega-6 fatty acids. Some may already have a place on your feed room shelves, but others may not. Here's a quick reference list.

Rich in omega-6 fatty acids: corn oil, safflower oil, canola oil, sunflower oil. Corn oil is probably the most popular fat supplement offered to horses—it's cheap and readily available. Feeding one or more of these, especially in combination with a high-grain diet, may supply a horse with a surplus of omega-6 fatty acids, skewing the ratio of omega-3 to omega-6 fatty acids.

Rich in omega-3 fatty acids: fish oils (cold-water species), flaxseed (linseed) oil. Fish oil is a direct source of EPA and DHA. Flaxseed oil, on the other hand, yields ALA, which then must be converted to EPA and DHA. In the past, these oils were typically not as palatable as those that provide more generous quantities of omega-6 fatty acids. However, recent studies at Kentucky Equine Research have addressed the palatability issue, and a new specially processed omega-3 product will soon be unveiled through KERx. For more information on KERx, go to page 12.

Performance horses might be the perfect candidates for supplementation of omega-3 fatty acids. Because they are often fed large amounts of grain to maintain body condition, these horses may consume diets containing too many omega-6 fatty acids.



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