newsletter

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BLENDING NATURE AND TECHNOLOGY

EQUUS
BLENDING NATURE AND TECHNOLOGY
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## in this month's issue



## USING OILS IN EQUINE DIETS

**Many horse owners frequently reach for a cup of oil to add to their horses' diet but with shelf upon shelf of different oils, which is the best choice and why should it be used?**

One of the main reasons for using oil is to increase the energy in a horse's diet to aid weight gain or to provide added energy without fizz. Oils supply extra energy without increasing the NSC - Non Structural Carbohydrate (which includes sugars and starch, namely cereal grains) - of the diet. Too much NSC in the diet increases the risk of digestive disorders and may be unsuitable for sensitive horses or those that become hot. Because oils provide about 2 ½ to 3 times more digestible energy than an equal weight of cereal grain, a high energy diet can be obtained by using oils without sacrificing any fibrous material critical for digestive health and the prevention of digestive disturbances.

**Benefits of including oil:**

Added oils are well utilized by the horse and studies show that fats and oils added to the horse's diet are 76 - 94% digestible. Even without increasing the total energy of the diet, having oils or fat in the ration has been shown to increase the amount of dietary energy available for growth, lactation and physical activity (Kane et al., 1979; McCann et al., 1987; Scott et al., 1993). Adding oils to the diet decreases total body heat production (beneficial for those working in hot climates), leaving more energy available for maintenance and production (Scott et al., 1993).

High-fat diets have been shown to enhance both aerobic activity (endurance activity) and anaerobic activity (sprint-type activity) and help to delay fatigue. Horses fed a high-fat diet appear to have greater muscle glycogen utilization with no change in their blood glucose concentration during anaerobic activity (sprinting), whereas during aerobic activity (endurance) there was comparatively a smaller reduction in blood glucose concentration. Glycogen sparing within the muscles also occurred further aiding in the delay of fatigue. (Oldham et al.,1990).

Research suggests that by providing oil in the diet which the horse can utilise when walking, trotting and even cantering (up to a heart rate of around 150 beats per minute), the stores of glycogen are spared so that when the horse starts to gallop he has a full tank of fuel to use for high intensity work resulting, in effect, in improved stamina. It also seems that, because the horse is starting with a full tank, he doesn't deplete energy stores completely, so recovers from an intense work period more quickly and can therefore perform more frequently.

Oils are generally suitable for any horse however those with veterinary conditions such as Laminitis, Cushings, Insulin Resistance, Tying up, Gastric Ulcers and even frequent colics, can benefit hugely from using oils within the diet. This is due to the fact that oils provide energy "safely" while avoiding the use of ingredients such as cereal grains and sugars, both of which can have harmful effects on horses with these conditions.

**So which oil is best?**

In terms of supplying energy, all oils are 100% fat, so there is no difference in the number of calories/energy each provides. However, there are large variations in the amount of omega-3 and omega-6 essential fatty acids that exist within oils used in equine diets. These essential fatty acids (EFA) are polyunsaturated fats needed for various metabolic processes. The horse's body does not produce EFAs, and thus these must be provided in the diet. Omega 6 and Omega 3 have the greatest biological activity in the body, which is why more focus is placed on these two.

Fatty acids are of particular interest to researchers because of their effect on inflammation and immunity. Increased levels of fatty acids supplied in Omega-3 oils may help to maintain pain-free, supple and mobile joints in horses and ponies. Benefits claimed of Omega-3 oils also include:

- Helping horses' joints and connective tissues heal and recover from the stress of exercise and thus aid recovery after training and competition.
- Promoting a healthy, shiny, glossy coat
- Promoting stronger and faster growing feet useful for horses and ponies prone to laminitis and those with slow growing feet or those difficult to keep shod.
- Boosting the immune system.
- Being good for the respiratory system.
- Helping to calm the temperament of excitable horses. .
- Ensuring correct development of the nervous system, brain muscles and skeleton.
- Maintaining and reparation of cellular walls.
- Anti-inflammatory properties.
- Aiding wound healing.
- Supporting a healthy heart and blood circulation.
- Anti-allergic properties.
- Supporting a strong metabolism.

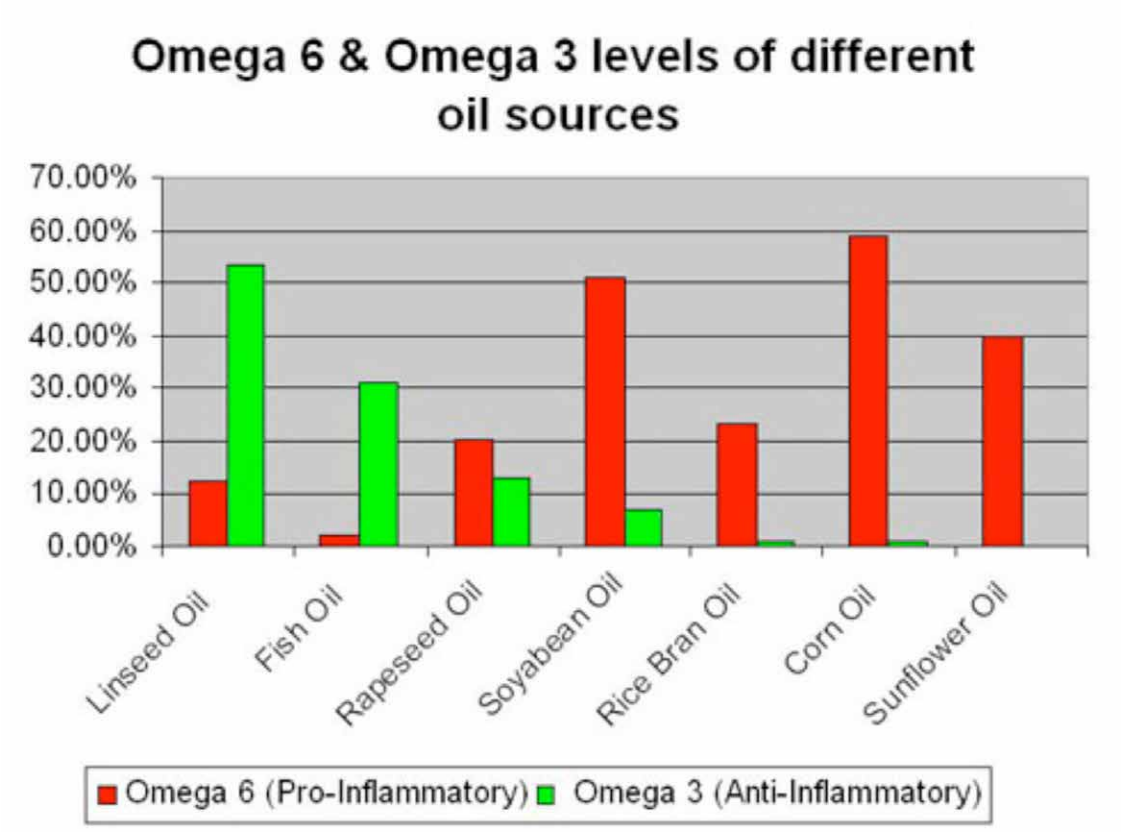
Oils containing higher levels of Omega 3 are found in the natural diet of horses (forage) and can be digested easily. Omega 6 oils, however, are generally found in larger amounts in cereal grains. Horses fed large grain meals, thus, may have more Omega 6 oils in their diet than Omega 3 oils while horses fed no grains may have more Omega 3 than Omega 6 oils so, as with all nutrients, balance is the key.

Research has shown that the correct ratio of Omega 3 to Omega 6 fatty acids is vital for the oils to work beneficially and therefore it is important that the correct combination is supplied in order to achieve the best results.

Currently, no exact ratio has not been established in horses, but given that Omega 3 oils are more prevalent in the horse's 'natural diet', its stands to reason that Omega 6 oils should be provided at a lower level or at least 1:1.

Studies have shown that higher levels of Omega 6 can increase spookiness, cause horses
to be more unmanageable, increase anxiety, increase cribbing, contribute to joint health problems (premature arthritis, injuries that fail to heal completely) and fertility concerns (weak or insufficient sperm, a reliance on hormones for mares) among others.

Despite this, Omega 6 should not be avoided as it is essential in supporting some inflammation required to fight infection and heal tissues as well as being involved in hormone production, brain function and regulating blood pressure.



**The percentage of: a) Oil, b) Omega 3s in the oil, and c) the 6:3 ratio found in these oil sources today**

| OIL SOURCES | % OF OIL IN THE SEED | % OF OMEGA 3s IN THE OIL* C18:3, C20S) | OMEGA 6:3 RATIOS [1] |
|---|---|---|---|
| **Recommended** | | | |
| Linseed | 36% | 53.3% | 1:4 |
| Menhaden (fish oil) | 100% | 31%** | 1:15 |
| Rapeseed | 28% | 12.9% | 2:1 |
| Soyabean | 18% | 7% | 7:1 |
| **NOT Recommended** | | | |
| Rice bran | 20% | 0.8% | 29:1 |
| Maize | 3.6% | 0.7% | 84:1 |
| Sunflower | 19% | 0.2% | 199:1 |

[1] Rounded to nearest whole number
* Fatty Acid composition as listed in the NRC's Nutrient Requirements of Horses
** Refers to the ingredient's TOTAL Omega 3s that contain C20s (EPA & DHA)
Other oils listed do not contain EPA or DHA

The tables (above) show the percentage and ratios of Omega - 6 and Omega - 3s contained in some of the different oil seeds and fish oil available.

*(Tables from http://www.baileyshorsefeeds.co.uk/feedingexplained/browsearticles:376.htm)*

**How do I keep the correct balance of Omegas?**
One of the best means is to increase forage and decrease concentrates as much as possible while maintaining a healthy weight.

For the concentrate, select a quality, complete feed that promises an improved Omega balance. It may still be weighted toward a higher Omega-6 profile, but extra Omega 3 is always beneficial. Choose concentrates that contain antioxidants such as vitamins C and E and minerals like selenium and zinc. During aerobic respiration which breaks down oil, free radicals are produced which, if not countered with antioxidants, can damage cell membranes including those of the muscles. Whilst the body produces its own internal antioxidants, these may be insufficient to deal with the additional free radicals produced by an increased inclusion of oil in the diet.

If extra oil is needed for energy or coat shine, then choose an Omega-3 supplement.

Avoid supplemental vegetable and corn oils, rice bran and sunflower seeds. Virtually all have a profile that is dramatically weighted toward omega-6, with the exception of canola which, at 2:1, is nearly neutral.

**Which oil should I choose and how much should I feed?**
Generally, when adding oil for extra energy then larger amounts are needed and thus Linseed or Canola oil may be more palatable than a Fish oil for example.

The amount required depends largely on the reason for which it is being fed. Adding coat shine generally requires only a small amount such as 80-120ml per day.

However, if extra energy is required, 150 - 400ml may be needed. Up to 100ml per 100kg of body weight of oil per day can be fed but this depends largely on the horse and how well he adapts to oil supplementation. The average horse will not need this maximum level.

**How do I introduce oils?**
As with all new feed additions, horses should be slowly introduced to the added oil. Start with a small amount of about 20-60ml increasing this amount by 20-40ml each week until the desired level is found. This may seem slow but this allows for the horse's digestive system to adapt to the fat which will reduce the likelihood of soft manure, a typical, though usually transient, effect of using oil.

It is important to note that complete metabolic adaptation to a high-fat diet has been shown to be achieved in 11 weeks, but not in 6 weeks (Custalow et al., 1993). Keep in mind, thus, that it will take a while before all the positive benefits of using high Omega-3 containing oils become apparent.

Complied by Hannah Botha (MSc Equine Science), Equus Nutritional Advisor

## TESTIMONIALS

Dear Equus

I wanted to write in to express my thanks for your feed.

My horse Aritana Darcy, is a big 17.5 hand TB, who can struggle with condition.

However the **Equus Cool n Perform 12%** really helps him to perform at his best, whilst still staying in great condition.

I have used Equus for the last 5 years and I have never seen a horse feed that suits my horse's needs better.

I will never buy any other feed for my horse.

Kind regards

*Christine Van Der Walt*

# FEEDING ADVICE – EVALUATING AND CHOOSING HAY

When choosing the type of hay to purchase, it is always wise to not only choose the type your horse prefers, but also one that matches his nutritional needs.

The most economical feeding programs maximize forage intake and then add concentrate feeds to meet any unfulfilled requirements. High grain intakes have been implicated as a risk factor in equine colic, which is a good reason to feed as much hay as possible. Diets with low levels of hay have also been related to an increased incidence of stall vices such as cribbing and wood chewing.

All horses should consume a minimum of 1.5% of body weight per day in roughage. As a rough guide, a horse requiring a restricted diet resulting from being either overweight or simply a good doer, could be reduced to an absolute minimum of 1% per day.

**Points to consider- Leaf to Stem Ratio**
Leaves have a higher level of digestible nutrients than stems and thus larger leaf content is desirable. If the hay has a higher proportion of rough, thick stems and very low leaf content, it generally points towards a less nutritious batch.

**Harvesting**
The biggest variable affecting nutrient content is the stage of maturity at harvest (cut). Very early cut hay often has a soft texture, is very leafy, and has a high nutrient density and palatability. Mid maturity hays are the most suitable for the average horse as they contain a good combination of leaf and stems while still being palatable. Mature cut hays tend to have a low nutrient value and palatability, meaning fussy eaters may not take well to this cut. However, this type of hay can be useful for horses needing a low calorie diet

**Types of Hay**

**Lucerne**
Lucerne generally has a higher nutritional value than most hays and is thus more suitable for horses with higher needs such as those in hard work, mares in foal or those lactating. Lucerne typically has a good ratio of stems to leaves, and provides a good level of calcium, quality fibre and other valuable nutrients. Mid cut Lucerne hay has a lower content of NSC and sugar making it suitable for those from conditions such as Laminitis, Insulin Resistance and Cushings.

Lucerne can be high in energy and protein which can be advantageous, but this could cause excesses if the energy and protein amounts are not adjusted in the concentrate food of the average horse. Ideally, no more than 50% of the daily roughage portion should be Lucerne.

It has been shown in many research studies that Lucerne can assist in reducing the stomach ph of horses which may be desirable in gastric ulcer situations.

**Oat Hay**
Cereal grain hays, such as oaten, barley, or rye hay are all high in NSCs during their growth phase. When cut at the optimum pre bloom stage (before flowering), they can contain in excess of 30% NSC and sugars. This makes cereal hays less ideal for sensitive horses. Once they seed (mature cut) however, the sugars are transferred to the seed head to form starch in the grain, leaving the stems with less sugar content. Good quality oaten hay is probably the most dangerous for sensitive horses as it is often cut and cured before, or at, milk seed stage.

**Teff and Eragrostis curvula**
Teff and Eragrostis are the two most widely used hay varieties in SA. They are palatable and provide a good amount of fibre without providing too high an energy value. This makes them suitable for the majority of horses. The major disadvantage of these hays is that the nutritional value can range hugely from good to extremely poor quality. Always select these types of hay carefully, looking for optimum harvesting stage, colour and leaf to stem ratio. Studies have shown that Teff hay can have a low NSC averaging around 10% or less. This makes it a suitable grass for horses with ailments like laminitis, Cushings and Insulin resistance.

**Selecting Hay**
Local availability often influences the popularity of a particular variety of hay in a geographical area. If a regular supply of a particular hay in your area cannot be guaranteed, rather choose one that will be readily available.

Most important, however, is that the hay is clean and free of weeds and field contaminations such as tin cans, twine etc. Hay that is mouldy or dusty should not be fed to horses. Hay containing dust or mould can inflame the respiratory tract and impair breathing ability. Hay should be green in colour, with a pleasant aroma. A sickly smell can indicate overheating, while a "straw" like colour can indicate excessive sun exposure. Brown hay can indicate rain damage.
Ideally, before buying hay, a sample should be tested in order to get an idea of the nutritional value to assist your nutritionist in assessing the horse's total diet.

Complied by Hannah Botha (Msc Equine Science) Equus Nutritional Advisor
*References taken from http://www.uky.edu/Ag/AnimalSciences/pubs/id146.pdf*

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*For an absolutely free consultation with no further obligation contact our professional consultants to schedule a visit to your yard.*

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