



Oil is energy dense and provides 2 ¼ times as much energy as carbohydrates from cereals.



feeding for staying power with oil



You can't change the genetic make up of an individual horse or transform a natural "sprinter" into a "stayer" but you can help any horse perform to the limits of his personal stamina with careful training fuelled by the right kind of energy and supporting nutrients.

Fibre Fuel

Forage should be the basis of every horse's diet but increased work demands mean it is rarely sufficient to maintain satisfactory condition and support the required performance so must be supplemented with additional sources of calories and other nutrients according to workload. Fibre remains a particularly useful source of energy for the endurance horse however, because its fermentation in the hindgut results in a slow release of its energy over a period of time. This means that fuel provided by fibre is available for use hours after it was consumed by the horse, thus helping to keep him going for longer periods. Fibre is also important for the healthy functioning of the digestive system and acts as a reservoir for water and electrolytes in the hind gut, helping to maintain crucial hydration levels.

Extra Energy

Carbohydrates from cereals, mainly oats, were traditionally the major source of additional energy fed to horses in hard work. The starch they contain consists of chains of glucose molecules tightly packed together and is broken down during metabolism to provide a readily available supply of glucose. The glucose produced from starch digestion can be used directly as an energy source or stored in the muscles and liver as glycogen for later use; it can also be stored as body fat.

As well as being used by muscles during intense work, glucose is the main source of fuel for the brain and other organs, so an exclusion of all starch and sugars from the diet is not necessarily a good thing. What is important is the way the cereals are cooked in order to make their starch content as digestible as possible to the horse and maximise the chances of them being digested where they should be. It is the passing of undigested cereals into the hind gut which can lead to digestive or metabolic upsets.

Metabolic Disorders

Whilst diet can certainly have an influence in triggering metabolic disorders, like tying up (recurrent exertional rhabdomyolysis (RER)), there are many other factors involved and it can be a combination of these that cause horses to have an attack. Horses suffering from RER have shown higher muscle glycogen stores when compared to healthy horses and it is thought that this causes lactic acid to be produced faster than it can be removed during exercise, resulting in muscle damage. It is felt that reducing the carbohydrate content of the diet helps to reduce excess glycogen, making oil a useful ingredient in the diet of susceptible horses as it allows this adjustment to be made whilst overall calorie intake can be maintained.

Fuel Oil

In recent years oil has become more widespread in its use as an energy source for horses which is not surprising since it is energy dense and provides 2 ¼ times as much energy as carbohydrates from cereals. This energy can however only be used when the horse is working at low intensities, when the required oxygen is available to break down the oil during aerobic respiration. Once the horse is working hard he cannot supply the oxygen quickly enough to maintain aerobic respiration so he moves into anaerobic respiration which can only utilise glucose or glycogen as its energy substrate.

Research suggests that by providing oil in the diet, which the horse can utilise when say 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 fast 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.

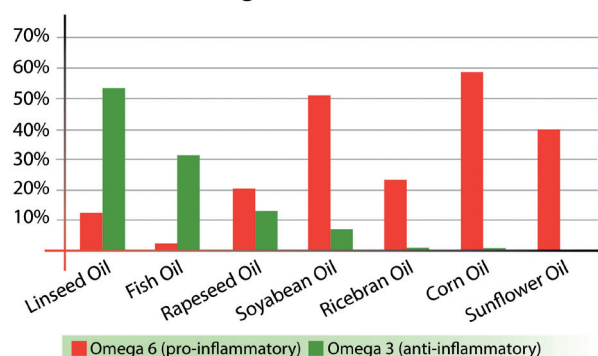
Although their natural diet does not contain much oil, horses can utilise it relatively well provided it is introduced gradually to allow their bodies to adjust. It offers the advantage, because it is so energy dense, of helping to increase the overall energy content of the diet without significantly increasing the volume of feed. This is particularly useful for horses at the peak of fitness whose appetites may become limited. The down side here is the palatability of the oil itself, which some horses can take a bit of getting used to. If you choose to feed straight oil, soya or corn (maize) oil tends to be the most palatable and needs to be fed at a rate of at least 250 – 500ml (1 – 2 coffee mugs) per day to make a significant contribution to the energy levels of the diet.

Antioxidant Support

To ensure the oil is used as efficiently as possible by the horse, a range of supporting nutrients are required. These include, in particular, antioxidants such as the vitamins C and E and minerals like selenium and zinc. During the 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. As a guide, for every 100ml of oil added to the diet an additional 100 IU of vitamin E are required; oil-rich compound feeds, like Baileys All-Round Endurance Mix, or high oil supplements, such as Baileys Outshine, will be formulated to account for this.

Levels of Omega 3 & 6 in oil sources



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

increase the inflammatory response. However, Omega 6 should not be excluded from the diet as they are essential to support some inflammation required to fight infection and heal tissues as well as being involved in hormone production, brain function and regulating blood pressure. Research has shown that the correct balance of Omega 3 and 6 fatty acids is vital for them to work beneficially and therefore it is important that a combination is supplied to achieve the best results.

BAILEYS OUTSHINE

Baileys Outshine high oil supplement has been formulated to provide just such a balance of Omega 3 and 6 fatty acids, supplied by an extruded blend of soya and linseed. With an oil content of 26%, it also contains the necessary supporting antioxidants, as well as highly digestible "super fibres" and Digest Plus prebiotic, and represents a palatable and mess-free alternative to straight oil.

Added in small quantities (up to 6 coffee mugs/3lb per day) to an existing balanced diet, Outshine helps increase the slow release calorie content of the diet without significantly increasing the total volume fed. This allows meal sizes to be kept down and helps avoid the risks associated with overloading the horse's limited stomach capacity.



The Practicalities

A horse's diet will naturally contain a small percentage of oil, with cereal grains containing between 3% and 4% and forages from 1% to 5%. For those looking to oil as an energy source to help improve stamina or simply as slow release "non-starch" calories, compound feeds are being developed which contain increasing levels and which should also supply a balance of fatty acids plus supporting nutrients. Some performance feeds contain a useful 5.5% to 6% oil but specialist "high oil" feeds, like Baileys All-Round Endurance Mix, can contain up to 10% and should have a correspondingly lower starch content.

The ideal endurance diet should provide a range of energy sources from fibre, to the readily available carbohydrate from cereals to the slower release energy provided by oil. Fed alongside good quality forage, All-Round Endurance Mix makes this achievable, offering top quality protein, to build outstanding muscle tone, plus vitamins and chelated (Bioplex®) minerals to support performance to the highest level. For those who need a little extra help going the distance, further oil supplementation could be the answer and Outshine offers an easy solution.



For further information or a practical and individual diet for your horse, contact one of Baileys Nutrition team on 01371 850 247 (option 2)
e: nutriiton@baileyshorsefeeds.co.uk
www.baileyshorsefeeds.co.uk