

ENERGY & TOPLINE WITHOUT OATS©
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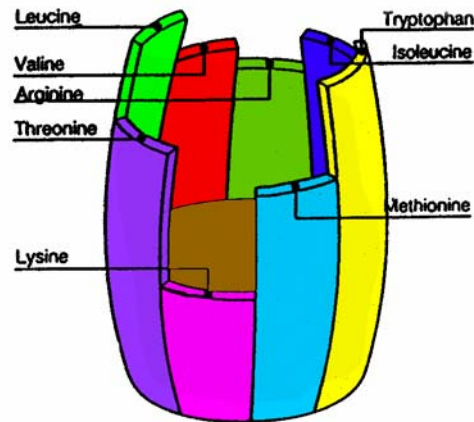
Lack of topline affects strength, stamina, stride length and the power:weight ratio. Horses may lose topline due to low quality feeds, amino acid deficiencies, dental problems, metabolic disturbances and diseases. Lack of energy can be secondary to poor muscling, below optimum lean muscle mass and/or a simple energy deficiency in the daily diet – regardless of the cause, the bottom line is reduced work tolerance. Whilst oats provide energy, there are more advanced ways, in terms of safety, efficiency and delaying fatigue, of meeting energy requirements.

As well as an adequate energy supply, sustained performance depends on a strong, athletic body and the ratio of lean muscle mass to fat – because this affects the power to weight ratio. Topline can be fat or muscle. Increasing ‘fat’ or ‘cover’ can usually be achieved by increasing calorie intake; increasing muscle mass requires correctly profiled protein. As in other species, including humans, the amount of carbohydrate in the diet affects energy levels and work capacity; the amount and amino acid profile of the dietary protein affects the amount of lean muscle mass.

Increasing ‘cover’ just requires an increase in calories – a simple enough principle. But it is important to determine what type of ‘weight’ you wish to increase – muscle, fat or both? To build muscle and cover, the glycaemic index and the amino acid composition of the feed are important – by reducing carbohydrate intake (grains, pollard, rice-bran etc) and fine-tuning protein (soybean meal, cottonseed meal, lucerne) intake we can reduce fat and build muscle mass.

When assessing the ‘muscle building’ power of a feed, there are 3 factors to consider:

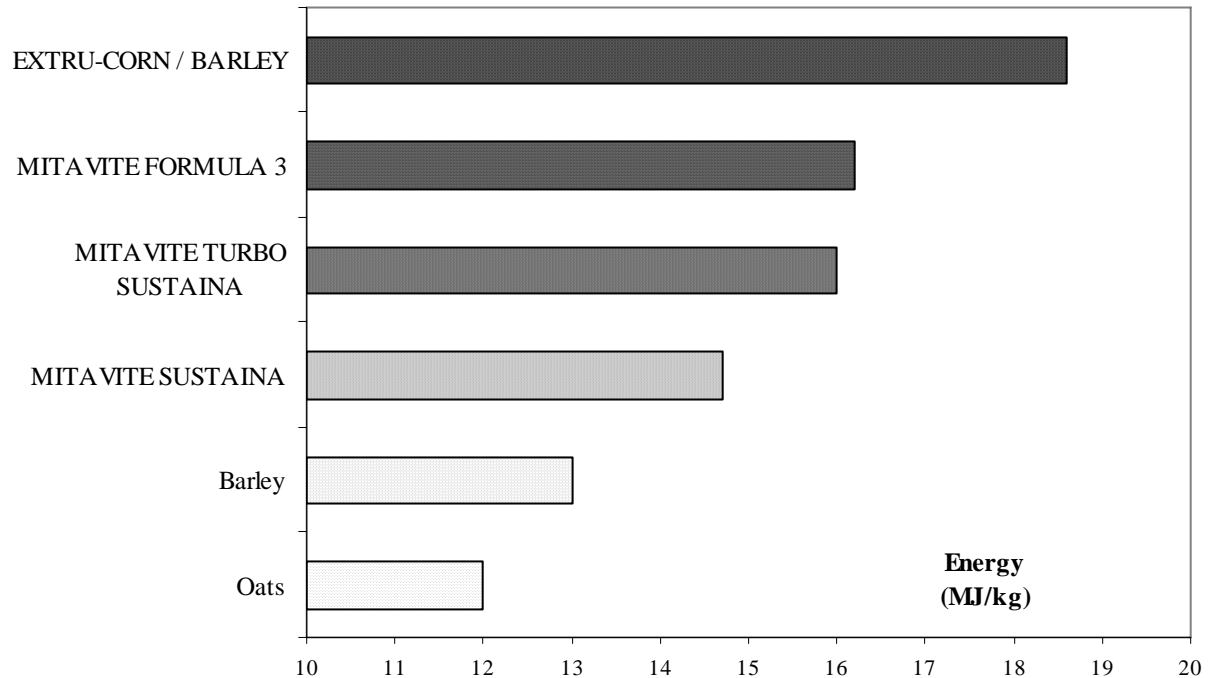
1. **Digestibility** in the small intestine. Highly digestible feeds are rapidly cleaved by digestive enzymes to yield amino acids. Feeds not easily digested in the small intestine pass to the caecum where they are degraded to ammonia - increasing urea and ammonia levels and wasting amino acids.
2. **Percent protein** is meaningless when assessing and comparing feeds. Horses require a certain number of grams of protein a day, not a percent. For example if a horse eats 1kg of a 20% protein feed – it obtains 200g of protein. If it eats 2kg of a 10% protein feed it again receives 200g of protein.
3. **Lysine and other essential amino acids** must be present in the correct amounts to make muscle protein. If one is deficient, the ‘recipe’ cannot be made. A useful way to picture this is with an old-fashioned wooden water (or wine or beer) barrel. The shortest slat sets the amount of water the barrel can hold. Similarly, if each slat represents an amino acid, the amount of bone and muscle a horse can build is set by essential amino acid deficiencies.



Amino acid deficiencies limit muscle development. So when considering protein content of a feed, consider also the amount fed, the amino acid balance, the processing method and the site of digestion.

In addition to the amount of muscle a horse develops, peak performance also depends on the supply of energy to drive and fuel the muscles. Providing almost 3 times as much energy as oats on a weight basis, oil offers many advantages in terms of energy efficiency. Oats will always be a good feed for horses – but selecting feeds that fine-tune energy and protein intake will always be better for performance horses. Protein and energy availability is higher from steam-extruded feeds than from grains, sweet feeds, or pellets. In a study at the University of Florida in the 1980s, horses fed steam-extruded feeds showed 18.5% better feed conversion efficiency than horses on a pelleted feed.

Energy in Different Horse Feeds



As well as the composition of the diet, the time of feeding is important to fine-tune performance. Hard training causes muscle damage due to oxidant damage and exertion. Hundreds of tiny microscopic rips and tears occur during intense exercise. In addition, intense exercise is a catabolic process involving the breakdown of body stores. By supplying the correct balance of carbohydrate, specific essential amino acids and anti-oxidants at certain specific times, the catabolic state can be switched to an anabolic (rebuilding of tissue) state, enabling muscles to recover and respond more quickly to training and racing. Feeding 0.5-1kg of PROMITA within 2 hours before or ½ an hour after hard work or competition will enhance glycogen synthesis and aid muscle recovery. To take advantage of the window of opportunity created by increased muscle blood flow and high levels of the hormones used to fuel muscles, the concentrate must be consumed within 2 hours to 30 minutes before work.

Preliminary work on the steam-extruded grains has shown that if fed within half an hour of completing work, muscle fuel levels can be restored more quickly. The rapid hydrolysis of steam-extruded grains in the small intestine maximises absorption of the glucose into the blood. Any starch can be fed after work to speed muscle recovery, but because raw grains are poorly digested, the effect is minor compared to that achieved with steam-extruded barley and corn. To promote a topline of strong back muscles, requires protein. MITAVITE feeds contain a blend of steam-extruded grains, vegetable protein meals and added amino acids to support muscle development and MITAVITE steam-extruded grains provide easily absorbed energy.

For further information on Mitavite feeds or feeding horses, contact Mitavite on 1800 025 487 www.mitavite.com.au