

FEEDING THE DRESSAGE HORSE

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The key to training and development of the dressage horse from novice through to International Grand Prix is gymnastic exercises that aim to strengthen the muscles and thereby avoid injury to joints and tendons associated with increased workload. Correct feeding of the dressage horse can aid performance. In this bulletin we will be looking at factors such as fatigue, temperament, body composition and feeding strategies that have been shown to be beneficial for performance.

Fatigue: During low-intensity, prolonged work (ie aerobic), fatigue occurs due to depletion of energy and overheating. Feeding strategies should increase blood and muscle glucose and address heat production. Falling glucose levels and rising lactic acid levels reduce muscle function and this places extra load onto tendons, joints and bones - increasing the likelihood of injuries. If we feed to increase energy, we can delay the onset of fatigue - because the horse will not have to rely so heavily on the processes that herald the onset of fatigue.

There are several ways to meet the increased demands of training: increasing the feed intake, increasing the energy density of the feed and adding oil to the diet. Relying on raw grains for energy can increase the risk of veterinary emergencies and lead to unpredictable behaviour. Both of these unwanted side effects are due to the poor digestibility of raw grains in the small intestine and their rapid fermentation to lactic acid and ammonia in the caecum and large intestine. Mitavite have applied the most recent technology to the time-honoured practice of cooking feeds for horses, to produce a range of steam-extruded and micronised grains and complete feeds.

Feeds such as **Economix**, **Formula 3**, **Munga** and **Promita** have been formulated to meet the increased demands of dressage training and competition without the risks of raw grains. Because of the increased nutrient-density, oil-enrichment and advanced processing, a lower weight of Mitavite feeds can be fed and still meet requirements. This allows for adequate roughage intake to be maintained - important for preventing stomach ulcers and stable vices and ensuring a healthy functioning gut.

Oils are becoming increasingly popular as a high-density, cool energy source. They are also an excellent way to increase the weight of a horse. By providing a cool and steady supply of energy oils exert a 'glucose-sparing' effect, delaying the onset of fatigue. so that although horses cannot increase their top speed, they can maintain it for longer. They are primarily digested in the small intestine and contain approximately 2-3 times more energy than the same weight of protein or carbohydrates fed. Introduce the oil to the diet gradually over a 3-6 week period. Begin with 5-10ml a day and increase it gradually by 5ml a day until reaching the desired amount. Monitor manure during the changeover and if it becomes too soft, reduce the rate of oil increase.

Because of the abundance of Omega 6 in diets, it is important to provide an Omega 3 supplement. When Omega 3 oils are included in the diet, human athletes report increased oxygen uptake and improved performance times. This is thought to be due to improved circulation, reduced blood pressure and increased flow through narrow capillaries in the lungs and muscles. Human athletes on Omega 3 supplements report less muscle soreness and shortened recovery after athletic events. A recent veterinary review article indicated that Omega 3 oils may be beneficial for treating colitis and enteritis, and in preventing arthritis, laminitis, small airway disease associated with stabling and dermatitis. All oils provide energy, only Omega 3 oils reduce inflammation. Mitavite has formulated a balanced blend of Omega 3 oils in **Mitavite Performa 3** oil and 80-100ml a day corrects imbalances in the diet of the dressage horse.

Heat: 'Heat' also contributes to fatigue. To cool itself by sweating, the horse must divert blood away from the working muscles, and send it to the skin. This reduces muscle bloodflow - hastening the onset of fatigue. The heat produced by working muscles can be reduced by feeding oil-enriched feeds and reducing the amount of unusable protein in the diet. Reducing heat produced during metabolism can be achieved by using feeds that are highly digestible in the small intestine, reducing the amount of fermentation in the hindgut. Steam-extruded and micronised feeds are over 90% digested in the small intestine, compared to only 21% for barley, 55% for oats and 29% for corn. **Mitavite Economix**, **Promita** and **Munga** are steam-extruded formulations and **Mitavite Formula 3** contains steam-extruded grains.

Temperament: High oil feeds offers enormous benefits for temperament, heat load and performance. To achieve these benefits, the diet must contain 10 - 12% oil. Oils can help to prevent swinging sugar and hormone levels that can cause unpredictable and restless behaviour. Steam-extrusion has recently been shown to produce a smaller glycaemic response than raw grains - providing steady energy levels and avoiding the large fluctuations in blood glucose and hormone levels that occur on raw grain diets. The heating effect of raw grains is largely due to surges in glucose and hormone levels that follow a meal. Mitavite Formula 3 is 12% oil, yielding 120ml of oil per kg and reducing the cost of adding oil to the diet.

If protein is unusable or above requirements, it yields ammonia and urea as waste products. Ammonia is an irritant to the central nervous system, causing restless, fidgety behaviour. By ensuring the amino acid profile is correct and maximising digestion in the small intestine, Mitavite feeds avoid the effects of unusable protein and ammonia buildup on temperament.

Body composition: Whether a horse lays down fat or builds muscle and bone depends on the quality, quantity and digestibility of the dietary protein. In addition, the loss of essential amino acids due to poor digestibility causes the horse to lose muscle strength, tone and condition and favors fat deposition at the expense of muscle and bone development.

Dry-extrusion results in loss of vitamins and destruction of essential amino acids due to friction and shear in the extruder barrel. Studies in Switzerland have shown up to 50% lysine damage when dry extrusion is used. Losses during steam-extrusion are negligible (around 5%).

Time of Feeding: High concentrate meals should be fed no less than 4 hours before competition. Blood glucose levels are lowest 90 minutes after feeding and if exercising at this time, fatigue comes on sooner. Roughage intake should be a minimum of 1% of bodyweight and available at all times to meet the psychological need to chew, reduce risk of stomach ulcers and maintain gut health.

Muscle Recovery: Supplying the correct balance of carbohydrate, specific essential amino acids and anti-oxidants after an intense workout, can switch the catabolic state (ie the consuming of protein and energy reserves) to an anabolic (rebuilding of tissue) state, enabling muscles to recover and respond more quickly to training and competition. Feeding 0.5-1kg of **Mitavite Promita** no more than 2 hours before or 1 hour after hard work will enhance glycogen synthesis and aid muscle recovery.

Veterinary research consistently shows that what is in the feedbin can adversely affect health and performance. Applying basic principles that have stood the test of time, with the most up-to-date sports science and nutrition research, the equine veterinarians at Mitavite have formulated fully extruded concentrates and complete feeds specifically for the competition horse.