

The science behind topline

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Support a beautiful, well-built, and impressive athletic horse?

A beautiful horse is a healthy horse. In addition to a healthy and shiny coat, beautiful mane and tail, and healthy hooves, well-built muscles are among the most critical aesthetic indicators in any horse.

For a healthy horse, a combination of optimised exercise, customised nutritional support, and regular monitoring of body condition score (BCS) results in bulking up and muscle building. An excellent top-line (a smooth transition from neck to withers), proportionate lengths to the neck, back, and hip with a tucked tummy are promising signs of the successful start of muscle building.

What is the science behind muscle building on the horse?

To address this question, we need to understand that muscle tissues have a dynamic environment, and there is a continuous turnover of muscle cells degeneration and regeneration. While a high-quality pasture or hay may be adequate to meet the nutrient requirement in an average idle horse, active, athletic horses under training have an increased demand for nutrients to support the elevated physiological functions and maintain/or gain muscle mass. The optimal nutrition aligned with the intensity and duration of training increases muscle gain via acceleration of muscle cells regenerations and suppression of degeneration. So, we need to have a customised nutrition and feeding approach to match the horses training load and nature.

The question is, how can we increase muscle mass via feeding in practice?

Horse nutrition is an art, and it is a harmony of physiology, biochemistry, biomathematics, and system biology sciences. An optimised diet is a delicate balance of all required nutrients and not just a single nutrient's piling. Hence, a targeted diet for supreme training and build-up of a horse must include essential and limiting amino acids and protein for muscle repair and recovery, carbohydrate and fat appropriately timed for fuel, and vitamins and minerals for fine tuning of biochemical reactions, along with nutrients digestion and absorption enhancers.

Importance of Protein for training and top-line building:

Muscle fibers are structural specialised protein complexes that need amino acids as building blocks of protein and energy to fuel up the building process. Re-grading protein requirements doesn't mean that excess protein maximises the top-line building or improves horse performance; however, a healthy horse needs a balanced amino acid profile in the diet, which means high-quality, balanced protein sources. Besides Lysine, as an abundant amino acid of muscle tissues, branched-chain amino acids (BCAA) constitute about one-third of the muscle's protein. It has been scientifically demonstrated that Leucine, Valine, Isoleucine, and Glutamic acid as BCAA play a crucial role in stimulating protein synthesis. In equine studies, it has been well established that the protein synthesis stimulating effects of BCAA help in the recovery process from exercise, glycogen restoring, delaying the fatigue via increasing the lactate production threshold during exercise.

Energy for training and top-line building:

Energy intake has an essential effect on the capacity to build muscle. Several studies have shown that higher energy intake, combined with progressive resistance training, induces greater increases in more muscle mass gain and a better top-line build up compared to lower energy intake conditions. Still, overconsumption of energy also can result in increased fat deposition. Therefore, an equine nutritionist's main challenge in formulating energy for training horses is balancing a caloric surplus threshold that delivers maximal top-line and muscle building with minimal body fat increases. A balanced diet for slow and fast-release energy with an energy partitioning from fat carbohydrate and soluble fibres energy sources help with achieving these goals. The aim of building excellent top-line is essentially a game of well-tailored energy partitioning or ensuring that most of the calories your horse consumes are used to build and fuel muscles.

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