Feeding and Supplements Prior to Athletic Performance

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Prior to athletic performance, procedures to increase muscle glycogen, referred to as glycogen packing or loading, have been utilized, most often in people. This is accomplished in people by decreasing or stopping exercise and increasing carbohydrate intake during the 2 to 3 days before a race. Similar regimens increase muscle glycogen in horses, but in contrast to people, appear to provide little or no benefit. However, impaired racing performances due to low muscle glycogen levels, and improvement in performance by increasing non-fibre carbohydrate intake (by feeding an additional 0.9kg of corn daily) for several days before a race has been reported. Too much of an increase in grain intake, however, may cause laminitis and endotoxaemia, and predispose to exertion myopathy (tying up). These risks are decreased by increasing grain intake slowly and by dividing it into several small meals.

In contrast to a possible benefit from increased grain intake during the last few days and up to 4 to 5 hours before a race, increased grain intake within a few hours or less before a race is detrimental. Feeding grain before this period, and feeding small amounts of grain periodically during endurance-type activity in not only not harmful, but may extend the time before fatigue or exhaustion occurs.

Feeding 1.5 to 2kg of grain 4 to 5 hours before, and allowing free access to forage and water up until endurance-type activity begins, has been recommended. Water and forage intake maximizes the amount of water and electrolytes in the gastrointestinal tract, and thus their availability to replace those lost during prolonged exercise. These are important for prolonged submaximal activity, as the horse's endurance capacity is limited by their loss.

Low-forage-high-grain diets, which decrease gastrointestinal water and electrolyte storage, were found in one study to correlate with increased risk of failure in endurance racing.

Reference:
Lewis, L.D. (1995). Equine Clinical Nutrition. Williams & Wilkins, USA.