

Anhidrosis in the Horse

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Anhidrosis, the inability to sweat, is a frustrating issue for horse owners, and a debilitating health problem for horses. Horses diagnosed with anhidrosis typically live in warm, humid climates with a high proportion of cases being clustered in the states along the Gulf Coast of the United States.¹ With the unrelenting heat wave experienced by much of the United States in the summer of 2011, it is not surprising that previously healthy horses outside of the Gulf Coast states are now developing anhidrosis for the first time.

Clinically-affected horses are unable to dissipate heat by sweating. In some horses, the reduced ability to sweat develops gradually but in other horses, the change is rapid. Anhidrotic horses often show signs of an increased respiratory rate and even respiratory distress as they work to lose heat through their respiratory tract.^{1,2} Their core body temperature may remain elevated, and both their heart rate and blood pressure may also be above normal. Chronically affected horses develop dry, flaky skin as well as thinning of their hair coat. The athletic potential of anhidrotic horses is greatly limited, resulting in the loss of use of the horse unless the horse begins to sweat normally.

The traditional therapy for anhidrotic horses has focused on moving the horse to a cool environment with low humidity. Many horses will resume sweating during the cooler winter months, but horses that are severely affected with anhidrosis may not improve even with appropriate environmental management. While cooling of an anhidrotic horse during the hot summer months can be accomplished in a temperature regulated stall, this housing change is not an option for most horse owners, leaving few therapies available for managing anhidrosis.

There are a variety of important nutrients to help support sweating. Sodium, potassium and chloride are electrolytes that are lost during normal sweating in the horse. Anhidrotic horses often begin to

sweat after treatment with sodium and potassium chloride.^{1,3} Vitamin E has been documented to be an effective treatment in some horses with anhidrosis.^{4,5} When a horse is unable to sweat, oxidative damage likely increases due to the high environmental heat stress the horse encounters. Therefore natural antioxidants, such as vitamin E and vitamin C, may be helpful in limiting the damaging effects of free radicals and other products of cellular oxidation. A variety of B vitamins helps to support normal cellular function in anhidrotic horses.

In the horse, endothelial nitric oxide synthase (eNOS) may promote peripheral vasodilation. An isoform of eNOS, neural constituent NOS (ncNOS) helps to regulate neurotransmission in the central and peripheral nervous system. Both forms of NOS are postulated to play an important role in the physiological control of sweating in the horse. Arginine is a precursor to nitric oxide synthase (NOS) and thus may play a role promoting blood flow in these pathways.

Results from a field trial of a commercially available product designed to support sweating in anhidrotic horses* showed a 66% success rate in restoring sweating and an 8% success rate in the partial restoration of sweating.

*Field trial results pertain to Platinum Refresh® (patent pending)

Literature Cited

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