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Biotin For Healthy Hooves and Hair

by REX A. EWING

Have you ever seen a horse (or worse yet, owned one) with feet that looked like they had been sculpted into the shape of a Martha Josie Barrel saddle by some mischievous, unseen craftsman? Maybe you've had the frustration of owning a horse who had hoof walls so weak and crumbly the horse couldn't hold a shoe. As late as the 1970's, nutritional remedies for such horses were virtually unknown. The amino acid methionine, offered some relief from certain pathological conditions, such as laminitis and navicular disease, but for really helping hooves to grow straight and strong, there was very little available.

In 1979, a British veterinarian, Dr. D. M. MacDonald, made a discovery that changed the course of equine nutrition forever. He had under his care a stable of horses with "hooves that were extremely soft, thin and rubbery. The feet were painful, and the horses were lame. These problems had existed for about a year."

Dr. MacDonald was aware of the promising research done with biotin supplementation on other species, and knew that foot lesions in pigs and turkeys had healed completely when biotin was added to the diet. He wondered if the same effects would be seen in horses. He began adding ten milligrams per day of biotin to the diet of each horse for five months.

Dr. MacDonald reported that, "The response was dramatic; after the treatment period, the hooves had become hard and sound, the cracks had largely grown out, the horses could retain their shoes and were returned to work."

Dr. MacDonald enjoyed equal success treating other similar cases. In 1981, he conducted a series of treatments and documented the results. He established criteria for the experiment to ensure he would be treating some of the worst hooves in the country. He found horses whose hooves had multiple cracks, ridges and eroded areas. Their hooves were so bad the horses could not retain their shoes. All other treatments had been tried without success. And they had suffered these conditions for at least one year.

Six horses met his strict guidelines. He began supplementation with 15 mgs. of biotin per day. Five months later, all horses were inspected. Solar Gift, a five-year-old Thoroughbred gelding was typical: "Improvement in all feet, especially both fores. All feet are now in better shape, the walls have become thicker and harder. There is very little crumbling on the lower edges of the walls, and the heels are stronger. The horse is no longer throwing shoes, and is going sound with no sign of tenderness in the feet."

When I read these words eight years ago I was excited. We had a foundered Thoroughbred stud with terrible feet who seemed like a prime candidate. But my question then was, "What is biotin?"

Biotin is considered to be a B vitamin because, like other members of the B family, it is soluble in water, and therefore not stored to any extent in the tissues. As early as the turn of the century a factor termed "bios" was shown to be essential for the growth of certain yeasts, though "biotin" was not isolated until 1935. It was found to be identical with "protective factor X" and "vitamin H" (from "haut," German for skin) which had been found to protect rats from conditions incurred from being fed raw egg whites. (Egg whites, it turns out, contain a protein called avidin that binds biotin and renders it biologically inactive. The egg does this to protect itself from

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invasion by bacteria that depend on biotin for respiration.)

Metabolically, biotin acts as a coenzyme; which is to say, it is a catalyst assisting in the speed and efficiency of chemical transformations. It's a lot like pouring gasoline on a wood pile and tossing in a lit match: you could probably get the wood to burn with the match alone, but not nearly so quickly or thoroughly as with gasoline as a catalyst.

Biotin and biotin dependent enzymes are necessary for the production of glucose (the food of the cells) and the synthesis of fat, the body's "reserves." Biotin is essential for proper growth of skin, hair and, by extension, hooves. It is contained in most foodstuffs, especially in raw liver, egg yolk, unpolished rice, cauliflower, mushrooms, milk and yeast, none of which is normally fed to a horse.

Some biotin synthesis does take place in the gut however, and in fact a biological deficiency in horses has never been documented. And this raises an interesting question: If not one single horse has ever been shown to be deficient in biotin, why in the world does it work so well? The answer comes in two parts. First of all, biotin alone does not cure all hoof problems. Many conditions have been treated successfully with just biotin; some with biotin, methionine and other amino acids; and still others with amino acids alone. Some horses' feet are inscrutable mysteries that respond to nothing.

Secondly, the fact that a condition caused by something other than a deficiency of biotin does not necessarily mean that it cannot be cured by it. For example, we know that penicillin can cure a bacterial infection, even though the infection was obviously not caused by a penicillin deficiency. Many horse owners remove biotin from the diet once the hooves return to normal, and never need to feed it again.

Metabolic pathways are infinitely complex. Sometimes a condition caused by a deficiency of one substance can be cured by a liberal introduction of another. The body compensates in every way it can. Hoof problems are often caused by toxins, either ingested or the result of a breakdown in metabolic chains brought on by previous pathological conditions.

Any way you cut it, the world is full of horses with bad feet, and biotin is the best bet on the market. No one knows why biotin does what it does. Strictly speaking, no one has actually proven that it does anything at all. But the word on the street is, "biotin works!"

Believe it.