

## A View from the Hoof

Behavioral Overcompensations;

*A Resulting Factor of Lasix...?*

By;

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As an independent Equine Ethological Researcher specializing in Equine Athletic Psychology, I study any stimulus or interpretation of stimuli regarding the horses' puzzle of life. I advance the following inquiry as to what, if any, behavioral side-effects there are for the highly sensitive equine athlete by the use of Furosemide, or Salix or Lasix, whichever name you are accustomed to.

For every action there is a reaction either physically, mentally, or both, and it is important to recognize that not reacting is also a *reaction*. By addition or subtraction of any inhibiting or stimulating factor, physical or sensory, we have initiated a cause and effect equation. Medicines are given to deliver what we hope is a positive reaction or response; sensory inhibitors are applied for the same reasons in many cases. It's all about the outcome for the Thoroughbred racehorse. It seems to me, however, that in an effort to manipulate the athlete either physically, mentally, or a combination of both by association, we may as well call it a potato sack race for the amount of physical and sensory inhibitors that are applied as *tools*.

The late 1970's saw the legalization of Lasix during a shortage of Thoroughbreds in North America. One doesn't have to look far all these years later to find as many opinions about the usage of the drug as there are people and horses. This is not an essay into the aspects of the actual drug itself; they have long been and are continuing to be written about and debated. I became quite interested in what may be the collateral side effects on a behavioral level. The horse is highly dependent upon the highway of sensory perception for most things in its life. The interpretation of stimulus within and without the immediate environment plays an obviously major role in everyday activities for the horse. Any manipulation of this process can cause a *Behavioral Overcompensation*, or more adequately called, **B.O...**

What is a Behavioral Overcompensation? B.O. is a resulting effect of one or more of the senses being compromised in any of a myriad of varying degrees. This can be induced by a physically applied sensory impediment such as blinkers, shadow roll, or by injury, lack of confidence, and even by medications or drugs. If any one of the normal senses used is suddenly inhibited, this can necessitate that, to *pick up the slack*, the horse will use a concentrated effort of one or more of the remaining senses to give it the information that is suddenly unavailable. I offer the next two examples of what this may well be like.

Having a normal conversation with a friend would suddenly take on a different perspective if you were to have someone, in mid sentence, place a big ball of cotton in each ear. Having your sense of hearing diminished would cause a moment of stress until your other senses began to *overcompensate* to make up as best you could for the sudden loss. You may focus more intently on the person's lips, or concentrate more intently on their voice, get closer. Your center of sensory focus has been shifted and whereas you may make up for the deficiency, you have in essence taken the bathroom window out to put it in the kitchen.

Another good example deals with a visual impairment. I walk down my steps to the basement at least two times a week carrying before me a laundry basket filled to the brim, the position of which inhibits my view of the stairs I am treading. At the bottom there is an old overhead beam that I have ducked under countless times without injury. I know it is there. However, because my vision is impeded by the basket, very often I find myself trying to focus on my feet to determine if I have or have yet to reach the concrete floor. The result is that I bang my head on the beam despite the fact that I know it is there and it is always in my visual aspect owing to its position. Having to use an abundance of tactile senses on my feet to determine my position so I don't twist an ankle, my senses overcompensate toward what is lacking naturally, and the beam becomes invisible.

What if you didn't have the faculty of reason to accompany your decision making process? What if your interpretation of the environment was at each moment of your life guided solely on the accuracy of your sensory system? It would stand to reason that 1) you would have a greater degree of sensitivity, and 2) any inhibiting factor would be equally magnified in its deficiency. I have noted many times in the paddocks of various racetracks a marked negative reaction from horses that were being fitted with their blinkers, noting the change in focus and demeanor. I make light of this fact not to question any trainer's methodology or reason, but to simply point out an example of how B.O. can affect the overall behavioral dynamics of the horse.

I will say here that it is my own opinion that an emotionally sound equine should not require any form of sensory deprivation to handle a given task. That is what training is for. A tell-tale sign of a mid-level horse is requiring a sensory inhibitor in order to perform to a satisfactory degree, such as blinkers, or a tight grip on the lead just under the chin. If we also include a shadow roll in our observations, then perhaps we must then include Furosemide, at least in the physical sense of being athletically sound.

Physically speaking, Furosemide is a loop diuretic used to treat fluid retention, thus it makes the horse pee a lot. It also helps control or *lessens* bleeding in the lungs by virtue of lowering the volume of blood. In other words it causes hypotension; low blood pressure. These things all being facts, one must look into what the *possible side effects* are to determine if the collateral issues that *might* occur, could also cause any sensory deprivations, hence stimulating a B.O affect. Behavioral Overcompensation in a relaxed state is one thing, B.O. in a high stress athletic environment is quite another.

For the horse to navigate successfully and safely while in motion it uses the same avenue of information that he or she is accustomed to when standing still. The thing to remember here is, as has been discussed in part or in full in heretofore written essays, that during a high stress situation such as moving off at a high rate of speed, the otherwise broad field of the senses is constricted, making every stimulus available far more individually important in decision making. Any sudden changes during motion requires the horse to focus rapidly, the confident horse makes the quickest decisions and is not reliant upon the next horse over to facilitate his decision. Inhibiting any one of the senses can cause inconsistent performances or worse -- injury or death.

The physical benefits or detractions of Lasix notwithstanding, if the drug is to be used it is my belief that we must consider what effect the use could possibly have on the equine sensory system. This affects behavior because behavior is influenced by the interpretation of stimulus, and the circle goes back to the physical, for the body is directed by what the senses are telling it. Performance inconsistencies are often directly related to the manipulation of the senses; skew the message, skew the results. It is truly what's between the ears that counts.

What are the possible side effects of Furosemide? The list is rather long and I will only point out a select few of these *possible side effects*: Hypotension, fluid and electrolyte abnormalities, weakness, drowsiness, restlessness, dizziness, blurred vision, hematologic effects and ototoxicity. Of the preceding it can be easily seen which *possible side effects* would lend themselves to manifest into Behavioral Overcompensations. It would be folly of course to advance the notion that every horse is affected by the aforementioned possibilities in the exact same manner, or even at all. However if there are *possible side effects* then we also must allow that from them there may be other issues coming along for the ride, or the race.

I have often wondered about the actions, or reactions I see from the horses about to be loaded at the gate, or indeed, while in the gate. Sensory inhibiting dynamics serve to mentally constrict the equine focus. The added physical restraint a visually impaired horse or restless, uncertain horse is asked to accept could be the tipping point. This may not be easily observed owing to a lack of outward reaction and not all horses respond the same way of course, but indeed, it is very likely that for some horses a race is lost long before the gate opens.

Among the worrisome *possible side effects* for me lay within the realm of ototoxicity. Ototoxic = having a deleterious effect upon the 8<sup>th</sup> cranial (vestibulocochlear, ear canal & equilibrium)

nerve or on the organs of hearing and balance. Even if we argue that being ototoxic is a stretch in the realm of *possible side effects*, and I am not saying that it isn't, one must consider another factor on the playing field of inner ear problems: vertigo. Vertigo can also be caused by a decreased blood flow to the brain and base of brain; Furosemide decreases bleeding by decreasing blood volume.

Pharmacokinetics is also another concern. How exactly does the equine's body distribute the drug, how long is the half life, is there an issue with dependency relative to its long use. I am so used to having a pot of coffee in the morning that I tend to get a little cranky if I cannot have it; I don't *feel* right. I therefore can become focused on what my body is *missing*. This does affect my behavior.

For the horse in motion nothing could be more burdensome or potentially dangerous than a footing and or balance issue, even at minute levels. At a high rate of speed any misstep can have life-threatening results. On the lowest levels B.O. are necessary to allow for more secure footing and decisions while in motion, which will most certainly deliver a very inconsistent performer and from here you are well on your way to an overall emotionally insecure athlete susceptible to any number of collateral issues that can include breakdowns.

The causing factor of the B.O. can be rather variable of course, and indeed these overcompensations do not always stem from a physical stimulus. Many horses find their disorders stemming from past experiences, where the acquired and associated instincts roam. Because of the process of layered associated memory, do not fall victim to the notion that "*I removed those blinkers and he still had pretty much the same result*". Overcoming established Behavioral Overcompensations can require time as the herd dynamics are built and expanded by layering themselves over the otherwise knee-jerk reactions of the horse. From a survival standpoint anything that has created uncertainty and stress, even if only one time, will become an associated memory to be avoided at all costs. If your horse thinks it's time to go, let them go, better to build from what you have than to manipulate in the hope to get what you want.

In my own opinion the use of Lasix has been far removed from its actual intended use. Checking tracheal wash fluid for 5 or 10 red blood cells is a far cry from the obvious, potentially serious issue of epistaxis. Exercise Induced Pulmonary Hemorrhage is also different in source than Patent Pulmonary Hemorrhage which can be bleeding do to allergens, infections and or hypertension. If your horse has been determined to suffer from PPH, I am not sure that I would select said horse to breed with mine. That being said, perhaps EIPH should become an annex to the pedigree line so at least a determination of Lasix use could be addressed. It makes me wonder if the horse is a serious bleeder, then perhaps it shouldn't be in the career it is in.

If any or all of the *possible side effects* have an effect in any degree, the potential for breakdowns is greatly increased owing to the Behavioral Overcompensations that follow. If we are knowingly breeding horses over and over again who have been determined to be serious bleeders, are we

securing the health of future Thoroughbreds responsibly? Or rather, are we quite happy with our potato sack races?