Concurrent use of veterinary drugs and herbal medicines in racing Standardbreds

Wendy Pearson

Abstract — Standardbred trainers from 1 racetrack and 7 off-track training facilities were surveyed to determine the most common drugs, and prevalence of concurrent herb administration. Furosemide (on-track) and anti-inflammatory drugs (off-track) were the most common drugs administered. Among horses on-track, 9.8% received herbs compared with 13.8% off-track horses; 67% and 58% of these horses, respectively, received concurrent drugs.

Résumé — Utilisation concomitante de médicaments vétérinaires et de plantes médicinales chez des Standardbreds de course. Les soigneurs de Standardbreds de 1 piste de course et de 7 installations d’entraînement hors piste ont été interrogés afin de déterminer les médicaments les plus courants et la prévalence d’administration concomitante de plantes médicinales. Le furosémide (sur piste) et les médicaments anti-inflammatoires (hors piste) étaient les médicaments les plus couramment administrés. Parmi les chevaux sur piste, 9,8 % ont reçu des plantes médicinales comparativement à 13,8 % des chevaux hors piste; 67 % et 58 % de ces chevaux, respectivement, ont reçu des médicaments concomitants.

While the use of nutraceuticals such as glucosamine and methylsulfonylmethane (MSM) has become common husbandry practice in racehorses, the application of herbal medicines to these horses is a relatively unknown entity. Herbal medicines have unique characteristics discriminating them from nonherbal nutraceuticals, arising primarily from the occurrence of secondary metabolites which protect the plants against herbivores, microorganisms, and other hostile environmental factors. These secondary metabolites have pharmacological activity in humans and animals and form the basis of a vast arsenal of conventional drug therapies (1).

Evidence is accumulating for the benefit that can be gained by inclusion of medicinal herbs into management of equine health. Research on horses has demonstrated the benefit of herbs in several equine disorders including recurrent obstructive pulmonary disease, allergic dermatitis, and joint inflammation, in addition to modulating immune responses in healthy horses (2). However, there are inherent risks to the use of herbal medicine in racehorses, in particular with respect to potential interactions with conventional drugs. High intensity exercise typical of athletic horses increases susceptibility of these horses to disease (3) and results in increased use of medications compared with sedentary horses. Thus, concurrent use of herbal medications in racehorses poses a potential risk of herb/drug interactions that are likely not recognized by the owner or attending veterinarian. There have been no studies describing typical drug use in Standardbred racehorses. Furthermore, it is not known if the pattern of medication differs between horses stabled at a racetrack versus those stabled at off-farm training facilities. This information is useful for the development of a differential risk assessment of herbal medicine use in racehorses.

This paper reports results of an investigation into the frequency of use of conventional medication in Standardbred horses in active race training, and the presence of concurrent herbal medicine use.

Standardbred trainers at 1 racetrack (Flamboro Downs, Hamilton, Ontario) (n = 122 horses; 35 trainers) and 7 off-track Standardbred training facilities in southern Ontario, Canada (n = 110 horses; 25 trainers), were asked to describe the types of conventional veterinary medications and herbal treatments administered to their horses over the previous 10 days. There was no attempt in this preliminary screening study to record the various types of herbal medications being used. Frequency data for on-track and off-track horses were compared using McNemar’s chi-squared test, with the Yates correction for continuity. Frequency of use was considered statistically different between on-track and off-track horses when \( P \leq 0.05 \).

The frequency of medication use in on-track horses and off-track horses is shown in Figure 1.

The most common medications used in on-track horses were furosemide > anti-inflammatory > bronchodilators > herbal

Department of Plant Agriculture, University of Guelph, Guelph, Ontario N1G 2W1.

Address all correspondence to Dr. Wendy Pearson; e-mail: wpearson@uoguelph.ca

Use of this article is limited to a single copy for personal study. Anyone interested in obtaining reprints should contact the CVMA office (hbroughton@cvma-acmv.org) for additional copies or permission to use this material elsewhere.
medicines > antibiotics > other [including hormone therapies, equine protozoal myeloencephalitis (EPM) medications and anthelmintics] > anabolic steroids. Frequency of herbal medicine use in on-track horses was 9.8% and 67% of these horses received other veterinary medications at the same time.

The most common medications used in off-track horses were anti-inflammatories > furosemide > herbal medicines > bronchodilators > antibiotics > anabolic steroids > omeprazole > others (including muscle relaxants, hormone therapies, EPM medications, and anthelmintics). Some form of herbal medicine was administered to 13.8% of off-track horses, and 58% of these horses concurrently received conventional drugs.

Horses stabled on-track had a significantly higher frequency of furosemide use ($P = 0.003$) compared with off-track horses, while off-track horses had significantly higher incidence of use of anti-inflammatories ($P = 0.008$), and anabolic steroids ($P = 0.004$) than on-track horses.

In all, 13.8% of horses (32 of 232) received some form of herbal medicine. Incidence of herbal medicine use was slightly lower in horses stabled on-track (12 of 122; 9.8%) than off-track (15 of 100; 13.6%) but the 2 groups were not statistically different ($P = 0.72$). On-track and off-track horses receiving herbal medications were equally likely to be receiving at least 1 conventional veterinary drug concurrent with herbal medicine use (67% and 58% for on-track and off-track horses, respectively).

Frequency of herbal medicine use in on-track horses was not statistically different from anti-inflammatory, bronchodilator or antibiotic use, and was statistically higher than use of anabolic steroids or other medications. In off-track horses, herbal medicine use was as frequent as that of antibiotics, anabolic steroids, and “other” medications.

Results from this small survey demonstrate that herbal medicine is commonly used in Standardbred racehorses in southern Ontario.

The most common drug used in horses stabled at the racetrack was furosemide, which was administered to 22.1% of on-track horses. This incidence of use is comparable to other reports of furosemide use in Standardbred racehorses (32.5%) (4). Off-track use of furosemide (14.5%) was significantly lower than on-track ($P = 0.003$), perhaps due to decreased intensity of exercise or, controversially, due to increased pressure for on-track horses to perform under the putative performance enhancing effects of furosemide (4).

Following furosemide, the next most common drug category used in Standardbred racehorses was anti-inflammatories (usually phenylbutazone and/or banamine), a practice significantly more frequent in off-track horses (24.5%) than on-track horses (14.7%) ($P = 0.008$). The high incidence of use of anti-inflammatories testifies to the importance of musculoskeletal lameness in racehorses, which has been reported by others (3). The relative distribution of anti-inflammatory use between off-track and on-track horses is expected given restrictions on racing horses with musculoskeletal lameness at racetracks. Therefore, anti-inflammatory use is expectedly limited in on-track horses compared with off-track horses.

Bronchodilators made up the 3rd most common drug used by trainers, and the frequency of use was not significantly different between on-track (13.1%) and off-track (11.8%) horses.

Herbal medications are the 4th most prevalent category of drugs used in Standardbred racehorses. Sub-classification of the types of herbal medications used was not attempted in this study, and indeed the nature of interactions between many herbal medications and conventional pharmaceuticals has not been described. What these data do suggest is that there may be significant risk of interaction between drugs and herbs in these animals, due to the high level of concurrent use of these 2 treatment regimens.

Interactions known to be related to the top 3 drug categories — furosemide, anti-inflammatories, and bronchodilators — have been reported. Ginseng (Panax quinquefolium or Panax ginseng) is associated with reduced efficacy of furosemide in humans (5), and its use should be avoided in horses receiving furosemide. There are many herbs with potential to interact with nonsteroidal anti-inflammatory drugs (NSAIDs). Any herbs containing salicylates [white willow (Salix alba) or meadowsweet (Filipendula ulmaria)] should be avoided, as they can lower the dose of NSAIDs which results in adverse effects (6). Other anti-inflammatory herbs such as ginger (Zingiber officinale) are reported to reduce the bioavailability of some diclofenac (7), thus reducing its efficacy. Conversely, combining NSAIDs with other herbs including the Mexican herb Cuachalalate (Amphipterygium adstringens) and the Indian herb Arjuna (Terminalia arjuna) have reduced the gastrotoxicity associated with NSAIDs without reducing their efficacy and may indeed be beneficial in horses under chronic NSAID therapy (8). A number of herbs have been associated with adverse reactions with bronchodilators such as theophylline, including St. Johns Wort (Hypericum perforatum) (9), ginkgo (Ginkgo biloba) (10), Cassia (Cassia auriculata), and Cardospermum (Cardospermum halicacabum) (11). These herbs should be avoided in horses being medicated with bronchodilators.

The current study demonstrates that herbal medicine use is widespread in Standardbred racehorses in Ontario both on
and off the racetrack. However, it is not known what types of herbs are used, or what the specific risks for interaction are. This question needs to be addressed in future research. Because only 1 racetrack was surveyed herein, and the off-track training facilities were in a similar geographical location, it is possible that these data represent patterns consistent only with this area. Larger studies that are inclusive of geographically diverse facilities are needed. We can conclude from the current data that concurrent use of herbs and conventional veterinary medicine is common, and may represent a significant risk for herb-drug interactions. Unlike conventional veterinary medicines, which are well characterized with respect to bioactivity, toxicity, and contraindications, medicinal herbs are largely uncharacterized, with relatively unspecified and variable bioactivities. Much research is needed in order to establish the safety of concurrent herbal medicine and conventional medicine use in racehorses. Only then can these 2 health systems be safely used in conjunction with each other.

**Acknowledgment**

This research was funded by the Ontario Horse Racing Industry Association (OHRIA).

**References**