THE DISQUIETING TRUTH ABOUT TOXIC HORSE MEAT

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PART 1 — INTRODUCTION

OF THE myriad medications regularly administered to horses one of the most ubiquitous, and at the same time exceedingly controversial, is phenylbutazone (PBZ) more commonly known as "bute".

Bute is non-steroidal anti-inflammatory drug (NSAID) used to alleviate musculoskeletal injuries.

This is particularly true in sport horses such as Thoroughbreds where susceptibility to these types of injuries is widespread due to the exacting nature of training and racing schedules.

The controversy is two-fold.

On one hand it centers on the integrity of the sport of horse racing and its use as a permissible race day medication in North America.

By contrast, no other racing jurisdiction in the world sanctions race day medications – phenylbutazone included. Not only does this implicate the ambiguity of "performance-enhancement" but also the welfare of the horse.

Bute is a potent anti-inflammatory that may not necessarily make a horse run faster but instead enables enhanced joint mobility that otherwise would be compromised in a horse with a weakened musculoskeletal structure in consequence of trauma incurred during training and/or racing; a horse that feels no pain will run as he would without the underlying physiological problems associated with his legs, feet or joints. Hence the premise of bute as a "performance-enhancing" measure.

Ironically the horse welfare component is intricately coupled with the "performance-enhancing" perspective; a dichotomy of sorts. However difficult it is to envision how these seemingly disparate aspects of “bute” as a race day medication are derived from the same argument nonetheless they do.

Despite the administration of the drug to quell the discomfort a horse may experience on race day, at the same time there is concern within the industry, in particular veterinarians and Jockey’s alike, that bute precludes the ability to perform an instructive clinical appraisal to assess the soundness of the horse as a result of its masking effects.

> "The preponderance of scientific evidence indicates phenylbutazone at levels currently permitted in U.S horse racing compromises clinical evaluation." [1]

In view of the deprecating attitudes expressed by racing jurisdictions around the world, together with these data and recommendations from a number of regulatory racing bodies within North America, the Racing Commissioners International (RCI) was motivated to make a proposal for reduced threshold limits in late October 2010.

Effectively this would more than halve the race day threshold level from 5 µg/ml of plasma/serum to 2 µg/ml.

> "The RCI’s Model Rules Committee suggested lowering the threshold for penalty for phenylbutazone — also called bute — to the board based on recommendations from the RCI Regulatory Veterinarians Committee, the RCI Drug Testing and Standards and Practices Committee, the Racing Medication and Testing Consortium, The Jockey Club’s Thoroughbred Safety Committee, The Jockey’s Guild, the Thoroughbred Owners and Breeders Association and the American Association of Equine Practitioners (AAEP)." [2]

A step in the right direction? Perhaps. However, at best it is an insubstantial compromise for the real implications.

First, there is little scientific knowledge as it relates to a decrease in plasma serum levels and the effects on the ability to detect infirmaries during pre-race examinations that may warrant race day disqualification. Secondly, it does not solve the race day medication issue.

> "In fact, an honest analysis of the published literature suggests if horse racing is to completely eliminate the problem of phenylbutazone masking

> injury, U.S. racing would need to adopt a minimum 48-hour withdrawal time for blood testing or the long-standing international rule based on urine testing." [3]

For those interested, the phrase "or the long-standing international rule based on urine testing" will, in due course, become the focus of this discussion.

Racing aside, more importantly this gesture fails to address the other side of the argument against bute.

That argument is the simple, yet sinister, fact that North American horses of whom the vast majority has been administered “bute”, routinely go to slaughter, are butchered, packaged and exported to European and Asian countries where horse meat is a culinary tradition.

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[1] http://cs.bloodhorse.com/blogs/finalturn/archive/2010/09/15/bute-not-in-racing-s-best-interet-by-dr-rick-arthur.aspx

[2] http://veterinarynews.dvm360.com/dvm/Veterinary+Equine/RCI-rules-on-reducing-phenylbutazone-thresholds-in/ArticleStandard/Article/detail/697064

[3] Ibid at 1.

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PART 2: WHY THE ISSUE WITH BUTE?

“BUTE” is by no means the only drug under scrutiny in the sport horse and racing industry however its metabolic activity and "decay life" in animal tissue is in direct contrast to many other legally permissible medications which are transient in nature and are biologically eliminated from the system over established intervals.

Of particular note however is the fact that “bute” is the most widespread anti-inflammatory in the global horse racing industry today.

It is estimated that 98% of NA professional sport and pleasure horses have received phenylbutazone at some point in their lives and is widely used in other horse industry jurisdictions around the globe.

The kinetics and drug activity of phenylbutazone and its metabolites (e.g. oxyphenbutazone) are characteristic of a bi-exponential decay rate (the sum of two single exponential decays) meaning, in theory, that regardless of the elapsed time there will always be residuals present in blood plasma (i.e. the concept of infinite division). [1]

An exponential decay rate can be expressed in terms of "half-life" where one half-life represents the amount of time it takes for the substance undergoing "decay" to decrease by one half of the original concentration.

Half-lives remain constant over the decay period and as the concentration approaches zero, the time to eliminate any residuals remaining in the system approaches infinity.

In other words, there will always be some residuals present regardless of the passage of time.

Table 1 and Figure 1 together illustrate a simple model of exponential decay.

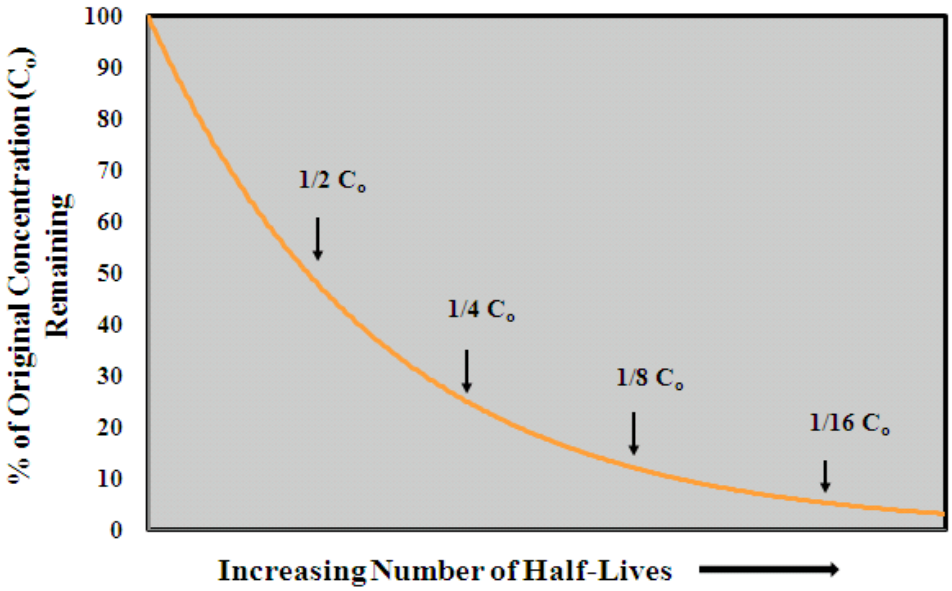
Of particular note is that regardless of the number of half-lives denoted by "n", the fraction or percentage of the original concentration of the substance under analysis will always be greater than zero.

Table 1: Exponential Decay Concept

Number of Half-Lives Elapsed	Fraction of Original Concentration Remaining	Percentage of Original Concentration Remaining
0	1	100
1	1/2	50
2	1/4	25
3	1/8	12.5
4	1/16	6.25
5	1/32	3.125
...	...	...
n	1/(2n)	100/(2n)

Where n = number of half-lives

Figure 1: Exponential Decay Curve Showing Persistence of Residues



Decades ago phenylbutazone, a compound originally used in Europe as a solubilizing agent for various analgesics given by intramuscular injection, was introduced to the drug compendium in the US for the treatment of rheumatoid arthritis and gout, nonetheless with fateful brevity.

Admitted in 1949, and shortly thereafter banned by the FDA for human use, by the year 2003 the ban extended to animals intended for human consumption given that investigation by FDA and State regulatory counterparts determined that phenylbutazone residues were discovered in culled dairy cattle. [2] [3]

At the time this did not include horses or dogs as in North America neither are considered food animals.

> "Phenylbutazone (PBZ) was marketed in the United States for the treatment of rheumatoid arthritis and gout in 1952. Serious and often fatal adverse effects such as aplastic anemia and agranulocytosis appeared in the literature within three years of its use . . . . . The serious adverse effects of PBZ culminated in its unavailability for human use in the United States." [4]

Apart from aplastic anemia (bone marrow suppression) and agranulocytosis (reduction in infection fighting white blood cells), phenylbutazone and its principal metabolite oxyphenbutazone have also been implicated in thrombocytopenia (low

platelet count), leucopenia (decreased white blood cells), pancytopenia (reduced red and white blood cells and platelets), hemolytic anemia (abnormal breakdown of red blood cells) and can cause hypersensitivity reactions in the liver leading to death. [5]

Moreover, phenylbutazone is a carcinogen, as determined by the National Toxicology Program. [6]

Clearly there is apt rationale for banning phenylbutazone for human use as well as animals intended for human consumption both as a function of its toxicity and the causal certainty that residues will always be present to some extent in the blood and hence tissues of animals slaughtered for food.

Additionally, what is most disconcerting is that the lethal adverse effects in humans are not always dose-dependent and demonstrate unique outcomes contingent on a particular individual's susceptibility.

In essence what this implies is that even in small quantities phenylbutazone and its metabolites can have deleterious effects on human health. [7]

To this end, the FDA has banned the use of phenylbutazone in horses destined for slaughter.

Moreover, there are no farming associations that raise horses for food in North America (unless the AQHA can be considered eligible).

And despite the fact that horse slaughter in the US has been outlawed since 2007, there is no pretense about what happens to more than 100,000 horses sold annually at auction who are shipped to Canada and Mexico.

Once butchered, their meat is exported to European and Asian locales where it fetches top dollar and is considered a delicacy.

The fact is that the majority of these horses will be administered phenylbutazone during some point in their lives to relieve musculoskeletal pain and inflammation.

This in itself is not entirely inappropriate as there are valid reasons for its use in the treatment of lameness providing the recommended dosage is abided by, as there are also potential life-threatening side-effects to the horse (e.g. severe gastric ulceration).

Instead, the glaring inconsistency is the unmistakable fact that these horses enter the food chain; perhaps not in North America but elsewhere through export to foreign countries nonetheless. What's more, since the residues of phenylbutazone

and its metabolites reside primarily in the blood plasma of the tissues there is the complicating factor of the inherent differences between slaughtered cattle and horse carcasses.

> "As stated above, almost all of the PBZ remains in the bloodstream. . . . To provide a point of comparison, a 1400 lb cow has 60 ml/kg body weight or almost 10 gallons or 0.71 gallons per 100 lbs of cow. The ratio is 1.25/.71 = 1.76:1. Thus, a horse has 1.76 times as much blood per pound of body weight compared to a cow."[8]

Potentially this means that there is a calculated measure of risk of the presence of higher concentrations of toxic residues in horse meat than in beef.

In actual fact there is no "risk" of higher concentrations in horse meat in light of the fact that the drug has been banned in other animals, such as cattle for example, intended for human consumption since 2003: the residues are undeniably higher in horse meat. Still the quandary exists.

> "The FDA, like the EU and UK, specifically bans the use of PBZ in any horse destined for slaughter for human consumption. Yet, this ban is being circumvented because there is no pre-slaughter mechanism to determine and remove horses that receive PBZ during their lifetime. This is because horses are not regarded as or treated as food-producing animals in the United States and there are no USDA regulations to prevent them from being given banned substances like PBZ." [9]

Horses may not be perceived as food-producing animals in the US, but they are certainly treated as if they are, in the same appalling manner.

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[1] www.beautysequinerescue.org/images/bute_contamination.pdf
[2] http://web.me.com/stevescrutton/Failure_ConMed/Apdx._Banned,_withdrawn_pharmacological_drugs.html
[3] http://www.fda.gov/AnimalVeterinary/NewsEvents/CVMUpdates/ucm124078.htm
[4] Ibid at 1.
[5] Ibid at 1.
[6] http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+3159
[7] Ibid at 1.
[8] Ibid at 1.
[9] Ibid at 1.

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PART 3: EU DRUG RELATIONS — CRACKS IN THE FOUNDATION?

"The European Commission is committed to protecting consumers from intolerable health hazards, which may be associated with residues of veterinary drugs or even of non-licensed or forbidden substances in animal products intended for human consumption. For this purpose legislation on veterinary drug residue control has been established as the indispensable basis of the consumer protection within the EU . . . . All activities of these laboratories must be in line with the provisions of this comprehensive legal act and therefore comprise not only the development of appropriate state-of-the-art residue control methods, but also a number of other duties of vital importance, such as the establishment of a uniform quality management system and above all a generally harmonised approach to residue control in all Member States." [1]

OVER the past several years the EU food-animal drug initiative has engaged in a concentrated effort to eliminate any horses who have been administered any prohibited substance bound for slaughter from entering the food chain.

A "passport" system has been established that requires documentation of medication history and express notification by owners that their horses are intended for slaughter (or not). [2]

Indeed an honorable and disciplined approach to an existent problem associated with the administration of medications to animals for human consumption. But does it recurrently apply to horses here in NA and elsewhere? According to regulations imposed upon North America in July of 2010 apparently so.

An effort spearheaded by International Fund for Horses alerted EU officials of drug violations resulting in the export of adulterated horse meat from North America for human consumption to its countries. Persistent lobbying eventually moved the EU to mandate a six-month quarantine on horses intended for slaughter in Canada and Mexico, who have not been specifically bred for that purpose. [3]

As of July 31, 2010 an Equine Identification Document (EID) is required for every horse that enters the slaughter pipeline regardless of country of origin and/or slaughter (i.e. United States, Canada and Mexico). This document must reference a visual description of the horse and a list of any medications that have been administered in the six months preceding slaughter. To date, the success of this

initiative in NA is seemingly less than satisfactory; the slaughter of thousands of Thoroughbreds, Standardbreds and Quarter Horses continues all of whom undoubtedly have received phenylbutazone within this time period. After all “bute” is a legal and permissible race day drug in North America, and is not limited to Thoroughbred racing.

More importantly, what this measure fails to consider is the fact that Phenylbutazone is on the forbidden medication list wherein no horse that has ever been administered “bute” is permitted to enter the food chain. [4]

Given that the majority of horses in North America continue to fall within this category clearly the export of horse meat to EU nations is not compliant. And this is only a single drug among the countless others routinely administered for various reasons.

Since there is "technically" no industry in North America that specifically breeds horses for their meat together with the widespread conventional use of phenylbutazone, one must come to the conclusion that the vast majority of these EIDs must be falsified.

There is nothing to suggest otherwise.

In fact, the European Commission Food and Veterinary Office (FVO) found serious violations during inspections conducted in November and December of 2010 of EU regulated plants in Mexico slaughtering horses for human consumption. Among other violations not surprisingly the matter of prohibited drugs was cited. [5]

- Random samples taken from horse meat processed in 2008, 2009 and 2010 tested positive for EU prohibited drug residues.

- Sworn statements made by horse owners on veterinary medical treatment histories were not authenticated and proven false, including cases of positive results for EU prohibited drug residues.

In terms of the presence of inadmissible drugs, the situation in Canada will prove to be no different as the source of the horses is consistent with those that enter the slaughter pipeline to Mexico.

But is it really any different elsewhere in the world?

Some countries do raise horses specifically for slaughter such as in France and other European countries.

> *"In Austria and northern Italy, the Haflinger, which is an expensive, prized*

breed of large pony/galloway here in Australia, is bred for the horse meat industry. They are run in the alps in herds just like one would cattle, and are slaughtered when they reach the desired age. They are well cared for, but they don't have names, they don't get groomed, stabled or pampered. They are livestock." [6]

On a global basis this is not the norm since horses are inefficient at converting grass and grain to muscle compared to cattle for example. In contrast, horses are typically raised as pleasure or sport animals — not intended for the food chain — and once their usefulness or monetary value declines they are slaughtered for their meat. Not only is this a convenient solution but it also turns a modest profit to their owner.

In fact, many of the countries in the EU that consume horse meat on a regular basis — Hippophagists, if you will, the act of feeding on horseflesh — import it from the very countries that do not farm horses specifically for their meat (both EU members and non-members). Many of these horses invariably have been administered phenylbutazone at some point in their lives.

Table 1. Selected EU Countries: Horse Meat Imports (2008 FAO Statistics) [7]

EU MEMBER	IMPORT TONNES AND COUNTRY OF ORIGIN								
	Argentina	Austria	Brazil	Canada	Ireland	Mexico	NZ	UK	Uruguay
FRANCE	1363	295	556	5229	168	958	-0	1045	564
BELGIUM	6945	112	4916	3218	198	5429	135	0	1189
NETHERLANDS	2177	0	1438	94	0	0	0	0	803
ITALY	2543	0	1284	71	1	0	0	0	378
GERMANY	206	0	0	1669	0	298	0	0	0

This list is not exhaustive, nor does it take into account non-EU countries that import large quantities of horse meat from sources not expressly farmed for their meat and equally at risk.

For example in the same year non-EU members Russia, Japan and Switzerland imported 20,263 tonnes, 5,255 tonnes and 4,729 tonnes respectively from a variety of the countries of origin in Table 1. It is merely a sampling of the facts and does not include horse meat trade amongst other EU members.

One can rest assured that this horse meat trade between various countries — EU member or not — is in no way intended for pet food.

The argument to consider is that in spite of the stringent policies in place, members of the EU fail to abide by their own rules, whether that be an importer or exporter (e.g. Ireland and the UK). Moreover these 2008 data do not fully disclose the increase in sport and pleasure horses entering the slaughter pipeline in several countries due to the economic downturn over the past 3 years, notably Ireland and the UK.

If truth be told, the slaughter of sport and pleasure horses for human consumption occurs in an abundance of the 27 member countries of the EU regardless of whether horses are expressly farmed for their meat in any particular country. This means that the figures cited in Table 2 above merely kiss the surface of the problem.

A few examples will serve to paint a clear picture of reality.

• Sweden

"Since Sweden has become very strict with what horses can be slaughtered there, the horses who don't have a 'clean' passport are being subject to a 'black market' and illegally transported to Italy— then their meat still comes back, packaged, for the Swedish grocery stores. . . ."

"Since the borders with the EU has opened, customs (border control) of animals in practice completely ceased. Swedish horses — which by law must have a veterinary certificate to leave the country — can now easily be shipped out, without anyone noticing. Through long and sometimes painful movements, which veterinarians and animal inspectors confirm, the horses finally are submitted to slaughter plants, in France, Belgium and Italy."

"The Swedish black market has ramifications to include Belgium, Eastern and Southern Europe and is a so far unknown part of an otherwise condemned and very large meat processing industry."

"It is difficult to follow each individual horse because the animals can change hands and papers several times on the road to the ultimate destination in Southern Europe", said Johan Beck-Friis of the Swedish Veterinary Association."

"From the harness race tracks disappear without a trace, some 1,000 horses each year. We have good reason to believe that unscrupulous horse dealers are buying up these individuals." [8]

• France

"Secretary Jenny Lupton told Horsetalk there was a culture of eating horse meat in France, and some horses were raised for that purpose. Others went to slaughter when their owners no longer wanted them . . . . "We have also seen British thoroughbreds in markets over here," Lupton said. "I think it has been going on for years." . . . . She fears it is the tip of the iceberg, with the majority going straight to slaughter." [9]

• United Kingdom

New figures released by the government show that last year the total of all horses and ponies slaughtered for meat in England, Scotland and Wales rose to 7,933, representing a 50% increase on the average number slaughtered in previous years.

"A lot of that increase, at least half, will be thoroughbreds," said Dene Stansall, an adviser to Animal Aid, a charity that campaigns against the use of animals in sport." [10]

• Ireland

"While statistics on the breed of horse slaughtered are not recorded by officials, the majority (60-80pc) are believed to be thoroughbreds.

John Joe Fitzpatrick from Shannonside Foods in Straffan says 80pc of the 2,200 horses slaughtered at his purpose-built plant last year were thoroughbred and 60pc would have raced.

The horses are sent for factory disposal for numerous reasons, including poor track performance, career-ending injuries, temperament issues, stable vices and lameness." [11]

• Italy

"According to several surveys, carried out in Italy, the meat coming from sport horses seems more appreciated by consumers, due to the more intense colour, subtler muscular fibres, lower fat content than the meat from heavy breeds." [12]

• South America

Further, Belgian-owned horse meat companies in South America (e.g. Argentina) where sport horses routinely end up in the slaughter pipeline export this meat to Belgium, Italy and France among other EU countries for human consumption. [13]

REGULATION INEFFECTIVE

Clearly the regulations are in place, but apart from the horses raised for their meat and some feral horses, overall the remainder, which proves to be a large portion of the whole, does not meet EU criteria in terms of "intended for human consumption."

Despite all of the rules and regulations imposed by the EU coupled with the prohibited substances lists enforced by the global horse racing industry, in particular the Fédération Équestre Internationale (FEI) and International Federation of Horseracing Authorities (IFHA) this anomaly of sorts can be ascribed to a single drug – phenylbutazone aka "bute" – the omnipresent and most widespread drug of choice for the relief of lameness in the horse.

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[1] http://www.sciencedirect.com/science/article/pii/S0026265X00000916
[2] http://horsewelfare.ca/news/102-new-eu-rules-may-end-slaughter-of-american-horses
[3] http://www.horsefund.org/about-us-three.php
[4] http://www.inspection.gc.ca/english/fssa/meavia/man/ch17/annexee.shtml#e4
[5] http://tuesdayshorse.wordpress.com/2011/05/03/inspectors-find-serious-violations-at-eu-regulated-horse-slaughter-plants-in-mexico/
[6] http://www.breedersales.com/About/News/A-REALISTIC-LOOK-AT-HORSE-MEAT.html
[7] http://faostat.fao.org/site/537/DesktopDefault.aspx?PageID=537
[8] http://forums.delphiforums.com/alexbrown/messages?msg=25065.6
[9] http://www.horsetalk.co.nz/news/2010/07/048.shtml
[10] http://www.guardian.co.uk/world/2011/feb/06/racehorse-slaughter-animal-welfare
[11] http://tuesdayshorse.wordpress.com/2011/03/17/from-the-3-10-at-leopardstown-to-a-meat-market-in-milan/
[12] www.unipr.it/arpa/facvet/annali/2001/martuzzi.pdf
[13] http://www.alop.org/2011/04/south-american-slaughterhorses/

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PART 4: "EQUINE ASPIRIN"

WITH the exception of North America some may query that international horse racing jurisdictions ban the use of NSAIDs, phenlybutazone included, for horses in competition. And that is rightly so.

However, this is purely a measure taken to ensure that it is not administered on race day or within any time period where it will be "detectable" at a specific threshold level for methods employed for its measurement nor affect the performance or the welfare of the horse during its next race.

The manifest certainty is that every country in the entire world permits the use of phenylbutazone for therapeutic relief. It is the cloak of the phrase “banned from use for horses in competition” together with the presumed adherence to EU regulations that dupes the masses.

Interestingly and somewhat puzzling is the 2011 FEI prohibited substances list effective April this year and its newly mentioned allowance of “bute”.

A conundrum in itself as “bute” has always been permitted between competitions, but has never been on an "approved" list of medications.

Instead, it is considered a "controlled" substance. Some rationale is circuitously provided by the group's chair, John McEwen, BVMS, MRCVS, who is also the FEI Veterinary Committee chair and the team veterinarian for the British Equestrian Federation.

McEwen said all NSAID drugs should continue to be prohibited during competitions, and drug testing for these substances should go on as before.

The FEI does not currently prohibit the use of NSAIDs between competitions, provided they are no longer detectable at competition testing, and the new recommendation does not change this.

> "What we're recommending is practical guidance and support, with clear, accurate, modern levels available," he said. [1]

What exactly this means is somewhat perplexing.Is their intent to change detection limits in favor of tolerating higher dosage allowances? This seems in direct contrast to North American initiatives.

In the fall of 2010, in the face of mounting criticism from fans and racing jurisdictions abroad, the Association of Racing Commissioners International (RCI) Model Rules Committee proposed a change in the North American tolerance level allowance of 2 micrograms of phenylbutazone per milliliter of plasma or serum, down from 5 micrograms as currently stated in the RCI Model Rules.

> "The policy for Bute has been the same for 30 years," Stirling said. “The testing threshold is five micrograms, but they want to lower it to two. Even Europe is considering going with eight." [2]

Regardless, the entire issue of phenylbutazone use in the horse is lost in the overwhelming focus on "race day" medication.

This is not to support the use of race day medication in any way but rather to garner attention to the fact that sport and pleasure horses are not immune from slaughter for human consumption, EU regulations withstanding. Recall that "lethal adverse effects in humans are not always dose-dependent and demonstrate unique outcomes contingent on a particular individual's susceptibility." Simply stated no amount of "bute" is safe.

In point of fact, the use of "bute" has always been permitted; the scorn of the industry has always been non-compliance by North America and its romance with race day medication. While it is true that North America has taken the administration of drugs to an abusive degree, nonetheless, the fact that virtually every sport and pleasure horse ends up on dinner plates around the world is unsettling.

Essentially every Thoroughbred, Standardbred, Quarter Horse or what have you has been administered "bute" – a known carcinogen, prohibited in horses intended for human consumption and forever present in the meat due to the nature of its exponential decay.

Indisputably none of these horses should be slaughtered for their meat, yet it is so very transparent that in fact they are, and despite the rigorous policies imposed by the EU.

Insofar as the EU regulations are inherently well-meaning there is undeniably a salient flaw in the system driven by greed – the engine that propels this most insidious multi-billion dollar industry. To the degree that North America is at fault in forging documents it is seemingly so elsewhere from a global perspective; perhaps not as unreservedly evident and prohibitive but nonetheless factual. How and when will this industry falter and regress?

The horse as it should be — revered as the iconic symbol it represents historically, emotionally and intrinsically — a vital element in the human journey.

As Holden Caulfield pontificates in *The Catcher in the Rye*:

> "I'd rather have a goddam horse. A horse is at least human, for God's sake."

What insightful truism was ever spoken?

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[1] http://www.rmtcnet.com/content_headlines.asp?id=&s=&article=738

[2] http://www.bloodhorse.com/horse-racing/articles/57419/wanted-supporters-of-change-in-bute-rules#ixzz1RWaqdvjv