



# LASIX:

## SCIENCE v. MYTHOLOGY:

Science and 4 Myths Concerning Lasix

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# MYTHOLOGY

1. A traditional or legendary story, usually concerning some being or hero or event, with or without a determinable basis of fact or a natural explanation, especially one that is concerned with deities or demigods and explains some practice, rite, or phenomenon of nature.
2. stories or matter of this kind.
3. any invented story, idea, or concept.
4. an imaginary or fictitious thing or person.
5. an unproved or false collective belief that is used to justify a social institution.



# SCIENCE

- **1. a branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws.**
- **2. systematic knowledge of the physical or material world gained through observation and experimentation.**
- **3. any of the branches of natural or physical sciences.**
- **4. systematized knowledge in general.**
- **5. knowledge, as of facts or principles; knowledge gained by systematic study.**

# Scientist

- A **scientist** in a broad sense is one engaging in a systematic activity to acquire knowledge. In a more restricted sense, a scientist is an individual who uses the scientific method.





# Scientific Method

- **Scientific method** refers to a body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge. To be termed scientific, a method of inquiry must be based on gathering empirical and measurable evidence subject to specific principles of reasoning.



- **systematic knowledge of the physical or material world gained through observation and experimentation, conducted by scientists using the scientific method**
- **Versus**
- **an unproved or false collective belief that is used to justify a social institution.**



# Myth #1

- Lasix interferes with drug testing by diluting the urine, making drugs undetectable.
- True, in part, for some drugs,
- ....10-20 years ago.

## Science

- Not true today: Regulation of dose and time of administration as well as monitoring of specific gravity eliminate the problem. Limits of drug detection have improved several orders of magnitude with the advances of immunoassay and new LC/MS/MS instrumentation. More testing is conducted in blood where the dilution effect of Lasix is not a factor.

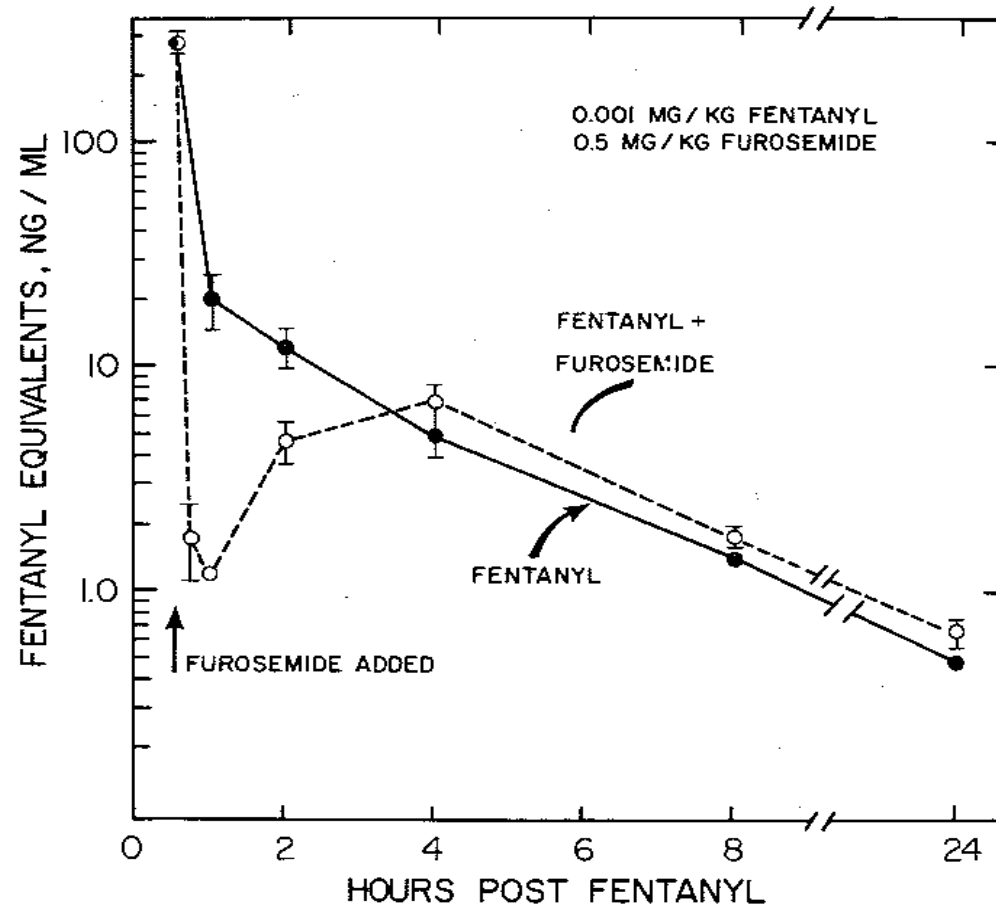


Figure 7-10. Urinary levels of fentanyl after 0.5 mg/kg furosemide. The solid circles (●—●) show urinary concentrations of fentanyl as fentanyl equivalents after administration of 0.5 mg of fentanyl to three horses. The open circles (○—○) show urinary levels of fentanyl equivalents when 0.5 mg/kg of furosemide was administered at thirty-one minutes after the fentanyl. The data show that this dose of furosemide reduced the urinary concentrations of fentanyl about fifteenfold and that the effect lasted for about two and one-half hours.





## Myth #2

- Lasix is performance enhancing.

## Science

Several early studies showed no significant effect of Lasix administration on race times for horses. These studies were criticized as having too small a number of horses (3-6) to overcome the high degree of variability seen in race times from horse-to-horse and for the same horse.



- However, studies examining race times of standard breeds running simulated races before and after Lasix administration found no difference (Tobin et al., 1978; Milne et al., 1980, conducted double-blind). And a retrospective analysis of 58 standard breeds before and after treatment with Lasix did not reveal any significant difference in actual racing times (Tobin et al., 1978; Shults et al., 1978).



- Two studies are mainly cited as showing that Lasix is performance enhancing, Sweeney et al., 1990 which examined 131 horses and Gross et al., 1999 which examine 22,589 horses. However, neither of these two studies used actual racing times for all the horses studied and complex handicapping statistics (used to assess the many variables involved in racing) were used to compute the results.



Unlike the earlier but smaller controlled studies, the studies by Sweeney et al. and Gross et al. used horses actually racing, computed race times and got their information regarding drug administration from vet's records and track-recorded data. They did not know with certainty when the lasix was administered or how much...or if other unrecorded drugs were also being administered!



the observed difference in the performance of horses that received furosemide, compared with those that did not receive furosemide, was a real difference, and that administration of furosemide was associated with superior performance in Thoroughbred racehorses.

There was also another association that they did not mention....

The data can equally be interpreted to prove that “When veterinarians with syringes and needles were given access to horses 4 hours prior to a race the horses were observed to have faster race times.”



## SCIENTIFIC CONCLUSION:

There are multiple studies that were conducted under controlled conditions that used known doses of lasix, that assured that other drugs were not used and that used actual race times that show that lasix does not have a significant effect on race time.

The Sweeney et al. and Gross et al. studies are scientifically and fatally flawed and must be dismissed.



## Myth #3

- Lasix is not effective in treating EIPH and has no therapeutic value.

## SCIENCE

Hinchcliff et al. (2009), in a randomized, placebo-controlled, blinded, cross-over field trial using 167 thoroughbreds, showed that pre-race administration of lasix decreased the incidence and severity of EIPH in thoroughbreds racing under the typical conditions in South Africa.



## MYTH #4

- Lasix is degrading the breed and is the reason that horses have fewer starts now than in the past.

## SCIENCE

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This myth is complete fiction, having no merit or scientific data to support the statement.



