

A Donkey is Not a Horse: The Differences From a Practical Veterinary Standpoint

Stephen R. Purdy, D.V.M.









Objectives of the Presentation:

- To discuss the practical differences between donkeys and horses.
- To discuss donkey and mule terminology, genetic makeup, anatomic differences, and donkey behavior.







Terminology associated with donkeys and mules:

- **Donkey**- worldwide common name for the ass family
 - **Jack, Jack Ass, or Jackass**- an intact male of the ass family
 - **Jennet, Jenny**- the female of the ass family.
 - **Burro**- the smaller member of the ass family, usually of Mexican or Spanish descent. Usually gray in color and commonly thought of as feral asses.
 - **Donkey Gelding, or Gelded Jack**- castrated male of the ass family

Hybrid Crosses:

- **Hinny**- the hybrid cross resulting from breeding a stallion to a jenny.
 - Mare Hinny- a female hinny.
 - Horse Hinny- a male hinny.
- **Mule**- the hybrid cross resulting from breeding a mare to a jack
 - Mare Mule- female mule, also referred to as a Molly Mule.
 - Horse Mule- male mule, often referred to as a John Mule.
 - Mule Mare- a mare used to raise mules.

Donkey Sizes:

- Miniature Donkey- member of the donkey family that stands at 36 inches or less at the withers at maturity.
- Standard Donkey- between 36 and 54 inches at the withers at maturity.
- Mammoth Donkey- greater than 54 inches at the withers at maturity.
- Jack Stock- indicative of multiple animals of mammoth size regardless of sex; similar to the term cattle for cows.





Genetic Makeup:

- Domestic horses- 64 chromosomes
- Domestic ass- 62 chromosomes
- **Mule**- female horse bred to a male ass- 63 chromosomes
- **Hinny**- male horse bred to a female ass- 63 chromosomes also
- **Both crosses are considered sterile even though there are documented cases of fertility in the female mule (Mare Mule or Molly Mule).**
- No documented cases of fertility in the female hinny or male of either hybrid cross.

- Spermatozoa are not produced in the testes of male mules as a result of incompatibility between paternal and maternal chromosomes resulting in a block in meiosis.
- Same chromosomal incompatibility causes partial meiosis arrest in female mules and hinnies with subsequent severe depletion of oocytes at birth
- Female mules and hinnies can be used as embryo recipients
 - do cycle- most often erratic
- Male mules are not seasonal in behavior- can be used as a teaser
- Train mares to accept pasture breeding by a jack
 - May not work

Mammoth Jacks







Anatomic Differences:

- Ear length- donkeys>mules>horses
- Most donkey and many mule withers cannot hold a saddle well
- Donkey mane and tail hair is stiff
- Donkey tails have short hair- mules may be more like horses
- Donkey croup muscles are usually less developed than those of horses
 - Modern mules are more like horses

- The donkey pelvis tips down caudally more than the horse
 - Important during reproductive exams and dystocias
- Hooves are smaller than those for equal sized horses
 - Frog is set more caudally than that for the horse
- Pastern angles are greater
- Donkeys do not have chestnuts in the rear
 - May be absent in mules or smaller on the rear legs than horses



Burnham



Front Foot:



Hind Foot:







Crossbred Feet



Anatomic Differences:

- Donkey ergots are more prominent than for horses
 - Often look more like a digital pad
 - May be up to 2 inches in diameter on mammoth donkeys
 - Mules more like horses
- Donkey inferior check ligaments
 - Have an extension from the deep flexor tendon to the superficial flexor tendon in the front legs (not found in the mule)
 - No ICL in the rear

Respiratory Differences:

- Laryngeal anatomy slightly different
- Donkey and some mule nasal passages are smaller than equal sized horses
 - Smaller NG tubes required

Castration:

- Larger scrotal vessels and thicker scrotal skin than the horse
- More prone to bleeding
- Use ligation along with emasculation
- Sedative/anesthetic drug doses approximately 25% higher in donkeys than equal sized horses
- Early castration at less than 3 months may increase chances of evisceration
 - Wait until after weaning
- Include the common vaginal tunic in the ligation if performing at < 3 months

Behavioral Differences – Donkeys are very stoic:

- Colic
 - May go undetected longer
 - Assume severe problem with mild pain signs
 - Treat with decompression of the stomach, analgesics, and antacids
 - Increased pulse rate may not be reliable
- Look for subtle changes in behavior or attitude

Laminitis:

- May progress without severe signs
 - Less responsive to hoof testers than horses
 - Radiograph early to look for rotation/sinking
 - Analgesic medications important

Tolerance of Medical Procedures:

- Best to perform with other animals nearby
- Donkeys need to see what is going on for a while
- “Stubbornness” is evaluation of the situation
- Twitch works well in most animals
- Go slow and stay quiet
- Reverse and stop are the best gears for donkeys
- Sedation with xylazine, butorphanol, detomidine
 - diluted to increase the volume
 - increase body weight dose by 25%

Donkeys are highly social animals:

- Form strong attachments to others
- Jacks aggressive towards newly introduced jennets
 - May occur after being brought back after a short separation- may need to wear a breeding muzzle on first introduction
 - Can be removed after things calm down
 - Kicking, biting, and chasing are the norm
- Vocalization very common- braying
 - Greeting, Hungry, Horny!
 - Calling out to other jacks

Pecking order is important:

- They need space to eat
- Mothers correct foals early in life with mild kicking and biting
- Foals play fight with mothers on day of birth
- Mothers move off from the herd to foal
 - Keep newborns away from others initially
 - Will stay out in the rain/snow with a new foal (normally they would be inside)



Hauling and drinking:

- Prefer to ride backwards
- Leave loose in a stock trailer
- May not drink when hauled, even for 12 to 18 hours and for hours afterwards if in a new place
- Can keep loaded if trip is less than 24 hours
- Stop to rest animals for an hour every 4 to 6 hours
- Stop and unload every 12 hours if hauling more than 24 hours

Drinking:

- Donkeys can dehydrate and lose 30% of body weight without adverse affects
- Can rehydrate by drinking within 5 minutes
- May refuse to drink for 48 to 96 hours if removed from their normal water supply
- Common for hauling, showing, and hospitalization
- May have to go home to resume drinking and eating

Drug Metabolism:

- Research is limited
- Differences exist among horses, donkeys, and mules
- Possibly also among different sizes of donkeys
- Difficult to make specific dosage and frequency recommendations
- Use horse specs

What we do know (research performed at Texas A and M University):

- Phenylbutazone- clearance after a single IV injection (4.4 mg/kg) is rapid; compared to horses, miniature donkeys may require more frequent administration to achieve therapeutic efficacy
 - Suggestion: 4.4 mg/kg IV or orally BID/TID or possibly 8.8 mg/kg SID

- Trimethoprim-sulfamethoxazole- dosing intervals for IV administration of trimethoprim (2.5 mg/kg)- sulfamethasoxazole (12.5 mg/kg) in horses may not be appropriate in donkeys and mules; donkeys eliminate the drugs rapidly compared with horses
 - Suggestion: oral or IV TS at same levels BID

Summary:

- Donkey/mule specific terminology must be understood to speak intelligently to owners
- Genetic makeup of donkeys and mules and horses is different
- Some interbreeding is possible
- Most donkey/horse hybrids are sterile but females cycle like horses
- Several clinically important anatomical differences exist between donkeys and horses
- Donkey behavior must be understood to handle them effectively and safely
- Stoicism is manifested by disguising pain

Summary:

- Subtle differences in attitude and behavior may be the only indicators of even severe problems
- Social interaction is very important to donkeys with regards to nutrition and reproduction
- Donkeys may go long periods of time without drinking during traveling, hospitalization, and when moved to new surroundings
- Drug metabolism is different among donkeys, horses, and mules
- Much more research is needed to define correct dosage levels and intervals in these species



References/Suggested Reading:

- The Definitive Donkey- A Textbook on the Modern Ass. Hutchins, Betsy and Paul. Hee Haw Book Service, 1999.
- The Professional Handbook of the Donkey. Svendsen, Elisabeth D.. Whittet Books, 1997.
- Taylor TS, Matthews NS, Blanchard TL. Introduction to Donkeys in the US. New England Journal of Large Animal Health; 1(1): 21-28, 2001
- Peck KE, Matthews NS, Taylor TS, Mealey KL. Pharmacokinetics of Sulfamethoxazole and Trimethoprim in Donkeys, Mules, and Horses. American Journal of Veterinary Research, 63(3): 349-353, 2002.
- Matthews NS, Peck KE, Taylor TS, Mealey KL. Pharmacokinetics of Phenylbutazone and Its Metabolite Oxyphenbutazone in Miniature Donkeys. American Journal of Veterinary Research, 62(5): 673-675, 2001.

Donkey Organizations:

- American Donkey and Mule Society, PO Box 1210, Lewisville, TX 75067 www.lovelongears.com
- National Miniature Donkey Association, 1450 Dewey Road, Rome, NY 13440 www.matrixdm.com/nmda
- Canadian Donkey and Mule Association, Julie Taylor, Box 341, Nanton, Alberta, Canada, TOL1R0
- American Council of Spotted Asses, Box 121, New Meile, MO 63365
- New England Animal Health Institute, PO Box 1160, Chester, VT 05143 www.NEAHI.org
- Donkey Publications
- The Brayer Magazine, American Donkey and Mule Society
- Asset, National Miniature Donkey Association
- New England Journal of Large Animal Health, New England Animal Health Institute
- Mules and More Magazine, PO Box 460, Bland, MO 65014 www.mulesandmore.com