

Long Island Veterinary Medical Association

Toxic Plants for Horses

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Plant Identification

- Identify plants by their scientific name to prevent confusion, as many common names will refer to multiple different plants.
- Good sources for identification include botany books, internet resources, and fact sheets or identification guides available from local cooperative extension offices.

Sample submission

- Plants—wrap in damp newspaper and submit promptly for identification.
- Hay—submit about 1 pound of hay from several areas of the hay as well as any obvious areas containing weeds or mold.
- Ingesta—can be used to identify toxic plants from stomach contents of horses are regurgitating or those stomach contents collected postmortem.

Prevention of Intoxication

- Pasture walks and removal of weeds, especially during times that pasture quality is low.
- Use herbicides per labeled directions. Herbicides should not be the sole source of weed control.

Hay Toxins

- Buy hay from reputable sources. If your clients grow their own hay, regularly inspect fields for noxious weeds and eliminate them before bailing hay. Nontoxic weeds should also be considered when inspecting hay, as they are often unpalatable and have a low nutrient content, both of which can decrease the nutritional value of hay.
- Maintain quality of the hay by storing in a cool, dry area with good ventilation. Keep rodents and birds away from hay. Animals that die in hay or birds that carry material from animal burials sites can contaminate hay, leading to sporadic outbreaks of botulism.

Specific Plants of Concern By Body System Affected

Blood Toxicant Plants

- Cyanogenic glycoside plants

This group of plants consists of a wide variety of trees, shrubs, and herbaceous plants, such as hydrangea (*Hydrangea* sp.), apple (*Malus* sp.), peach, plum, almond, and cherry (*Prunus* spp.), pear (*Pyrus* sp.), serviceberry (*Amelanchier* sp.), vetch (*Vicia sativa*), acacia (*Acacia greggi*), common flax (*Linum usitatissimum*), poison suckleya (*Suckleya suckleyana*), white clover (*Trifolium repens*), arrow grass (*Triglochin maritima*), corn (*Zea mays*), velvet grass (*Holcus lanatus*), birdsfoot trefoil (*Lotus corniculatus*), and elderberry (*Sambucus canadensis*).

- *Allium* spp.

This group of plants consists of garlic (*A. sativum*), onion (*A. cepa*), leeks (*A. porrum*), and chives (*A. schoenoprasum*).

- Red Maple (*Acer rubrum*)

Renal Toxic Plants

- Sorghams

This group of grasses consist of sorghum, sudangrass, and sorghum-sudangrass hybrids (*Sorghum bicolor*, *S. bicolor* var. *sudanense*, *S. bicolor* var. *drummondii*)

Musculoskeletal Toxicant Plants

- Stringhalt Inducing Plants
This group of plants include flatweed or false dandelion (*Hypochaeris radicata*) and European dandelion (*Taraxacum officinale*).
- Black Walnut (*Juglans nigra*)
- Hoary Alyssum (*Berteroa incana*)
- Sycamore maple (*Acer pseudoplatanus*)

Respiratory Toxicant Plants

- Perilla Mint (*Perilla frutescens*)
- Goatsrue (*Galega officinalis*)
- Water Hemlock (*Cicuta maculata*)
- Yellow Jessamine (*Gelsemium sempervirens*)
- Yesterday, Today, and Tomorrow (*Brunfelsia* sp.)
- Phalaris (*Phalaris* sp.)
- Yellowstar Thistle (*Centaurea* sp.)
- Privet (*Ligustrum vulgare*)
- Anticholingeric Plants

This group of plants contains a large number of plants from several different genera. A few of these plants include jimson weed (*Datura stramonium*), deadly nightshade (*Atropa belladonna*), henbane (*Hyoscyamus niger*), black nightshade (*Solanum nigrum*), and silverleaf nightshade (*Solanum eleagnifolium*).

- Poison Hemlock (*Conium maculatum*)
- Cardinal Flower (*Lobelia* sp.)
- Kentucky Coffee Tree (*Gymnocladus dioicus*)
- Ohio Buckeye (*Aesculus glabra*) and Horse Chestnut (*Aesculus hippocastanum*)
- Thiaminase Containing Plants
This group of plants contains Horsetail (*Equisetum* sp.) and Braken Fern (*Pteridium aquilinum*).
- Neurotoxic Blue Green Algae (*Anabaena* sp., *Planktothrix* (*Oscillatoria*) sp., and *Aphanizomenon* sp.)

Cardiotoxic Plants

- Cardiac Glycoside Containing Plants
There are a wide array of plants that have cardiac glycosides as their toxic principle, including oleander (*Nerium oleander*), foxglove (*Digitalis purpurea*), lily-of-the-valley (*Convallaria majalis*), and broad-leaved milkweed (*Asclepias* spp.).
- Grayanotoxin Containing Plants
There are also a large number of plants that have grayanotoxins as their toxic principle. Some of these plants include: rhododendron and azalea (*Rhododendron* spp.), laurels (*Kalmia* spp.), and Japanese pieris (*Pieris japonica*).
- Japanese Yew (*Taxus* sp.)
- Cottonseed (*Gossypium* sp.)
- Avocado (*Persea americana*)
- White Snakeroot (*Ageratina rugosum*)

Gastrointestinal Plants

- Oak (*Quercus* spp.)
- Black Locust (*Robinia pseudoacacia*)
- Slaframine toxicosis
This results from ingestion of red clover (*Trifolium pratense*), white clover (*Trifolium repens*), alsike clover (*Trifolium hybridum*) and alfalfa (*Medicago sativa*) infected with *Rhizoctonia leguminicola*.

Dermal Toxicants

- Primary Photosensitizers
Plants that can cause primary sensitization include St. John's Wort (*Hypericum perforatum*), Buckwheat (*Fagopyrum esculentum*), Smartweed (*Persicaria* spp.).

Hepatotoxic Plants

- Secondary Photosensitizers
- Cocklebur (*Xanthium strumarium*)
- Pyrrolizidine alkaloid containing plants
Multiple species of plants contain pyrrolizidine alkaloids, such as ragworts (*Senecio* spp.), Rattlebox (*Crotalaria* spp.), fiddleheads (*Amsinckia* spp.), comfrey (*Symphytum officinale*), viper's bugloss (*Echium vulgare*), heliotrope (*Heliotropium* spp.), houndstongue (*Cynoglossum officinale*)
- Lantana (*Lantana camara*)
- Sago Palms (*Cycas revoluta*)
- Hepatotoxic Blue Green Algae (*Microcystis* spp., *Anabaena* spp., *Planktothrix* spp., *Nostoc* spp., *Hapalosiphon* spp., *Anabaenopsis* spp., *Nodularia* spp.)

Reproductive Toxicant Plants

- *Neotyphodium coenophialum* infected Fescue (*Schedonorus* spp.)
- Sweet Pea (*Lathyrus odoratus*)

REFERENCES AND SUGGESTED READINGS

- Agrawal K, Ebel JG, Altier C, Bischoff K. Identification of protoxins and a microbial basis for red maple (*Acer rubrum*) toxicosis in equines. *J Vet Diagn Invest.* 2013 Jan;25(1):112-9.
- Burrow GE and Tyrl RJ. *Toxic Plants of North America.* 2nd ed. Ames: Wiley-Blackwell, 2013.
- Cross DL, Reinemeyer CR, Prado JC, Donnell RL, Bond KG, Farr H, Longhofer SL. Efficacy of domperidone gel in an induced model of fescue toxicosis in periparturient mares. *Theriogenology.* 2012 Oct 1;78(6):1361-70.
- Elpel, Thomas J. *Botany in a Day: The Patterns Method of Plant Identification: An Herbal Field Guide to Plant Families of North America.* Pony, Mont.: Hops Press, 2013.
- Galey FD. Botulism in the horse. *Vet Clin North Am Equine Pract.* 2001 Dec;17(3):579-88.
- Reduce the Risk of Feeding Horses Contaminated Hay. ASPCApro.
<https://www.aspca.org/resource/reduce-risk-feeding-horses-contaminated-hay> . Accessed May 1, 2021.
- Turner, Jason L et al. *Potential Poisoning of Horses Consuming Sorgham, Sudangrass, and Sorgham-sudangrass Hybrid Forages.* New Mexico State University Cooperative Extension Service. Guide B-720. March 2021. https://aces.nmsu.edu/pubs/_b/B720.pdf.