

**T**he horse is an herbivore that exclusively feeds himself, in nature, with diverse parts of plants, mainly herbs. Therefore, the plant kingdom also has their own survival defense. In fact, many plants contain harmful substances that could advise again their daredevil users qualitatively or/and quantitatively. Then, among herbs available for horses, there are not only essential nutrients, but also non nutritional factors that can clearly be damaging. There are however not that much poisonous plants that can be dangerous for horses. Nevertheless, in those particular cases, it's unavoidable to know them, at least insure their control in the paddocks and in field used to produce hay.

### GENERAL APPROCH

#### Which part of the plants and when?

First of all, in term of plant toxicity, many questions need

*Yew (Taxus baccata), conifer native to western, central and southern Europe has toxic seed only.*

*Verat (Veratrum spp.) and ferns (Pteridophyta division) have mainly poisonous rhizoid.*

*The snowdrops (species of Galanthus genus), that form white carpets in the landscape at spring time, have toxic bulbs.*

*The Common Hawthorn bloom (Crataegus monogyna) has specific toxic flower that bloom in late spring.*

*That being so, realizing that your horse shows abnormal symptoms grazing on an infested field during a critic period (plant cycle of life) of the year should take your attention. Be aware of the reactions of your horse and/or man-*



*Toxicodendron radicans*



*Tamus communis*

reflection: which part of the plant is dangerous and which shape it has, or what is the lethal or toxic dose for horses? It then become of essential concern for every poisonous plant to carefully identify the plant itself, her life cycle and then, its dangerous part. For example, the ivy (*Toxicodendron radicans*) from hederia plant genus, is entirely toxic but above all for their fruits. The tamaro (*Tamus communis*) has an exclusive toxic location situated in the red fruits.

age him in an other way in case of doubts to avoid troubles.

#### In which condition the poison of the plants could be active?

Another aspect to consider; many essences will get their venomous action when they are fresh and lose their toxicity, mainly because of the heat and the deshydration status, when desiccated. It is the case of the Ranunculaceae family where the plants will normally lose their potential toxicity with a warm desiccation condition and will not be of major concern if the hay is well dried. Therefore, hay containing Monkshood (*Aconitum napellus*) or Hellebores

# F O I R

Plant poisoning

# H O R S E S



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*Taxus baccata*



*Veratrum*



*Pteridophyta*



*Galanthus nivalis*



*Crataegus monogyna*





*Aconitum napellus*



*Helleborus foetidus*



*Helleborus viridis*



*Nerium oleander*



*Cicuta virosa*



*Laburnum anagyroides*



*Conium maculatum*



*Digitalis purpurea*

*(Helleborus genus), part of this family, will be consider save only when dry and mature in term of fermentation also.*



*Laburnum alpinum*



*Buxus sempervirens*

*toxic at a low dosage. For example, lethal dose of Digitalis and Oleander (Nerium oleander) for horses are about 100 g; 250-500*

*The same thing is valuable for the Water Hemlock or Cowbane (Conium genus) as it contains a venom that evaporate slowly and absolutely request a complete fermentation process to be consider out of danger, while 2,5-5 kg*

*g for Hellebores; 500 g for the Conium (Conium maculatum and Cicuta virosa); 500 g for some hedge trees like the Common Laburnum (Laburnum anagyroides) and the Alpine Laburnum (Laburnum alpinum), 1 kg for the Box*



*of fresh plant is fatal for horses.*

***At which dosage the plants are toxic?***

*Another important aspect to look upon is the dosage because: "every substances is toxic and no one is perfectly harmful; only the dosage will determine the toxicity", according to Paracelsus. This mean that some venoms can be used, in particular dose, as medication (like the small amount use of Digitalis purpurea extract containing cardiac glycosides for the treatment of some heart diseases), while some other theoreticly save can be toxic at high dosage.*

*It is anyway good to mention that there is a lot of plants*

*(Buxus spp.) and 500g – 5 kg for the Yew (Taxus baccata).*

*In general, cases of lethal poisonings are relatively rare and above all, link to toxic plant ingestion by inexperienced and bored horses or by individuals put in a degraded pasture considerably infested by poisonous flora. On the other hand, the chronic poisonings, link with the continuous ingestion of small quantities of toxic plants are harder to recognize because of the symptom subtleties. In this case, evidences will normally be observed through the liver and the kidneys, decreasing the horse general form and performance and increase the probability to bring the animal some other relative problems. Among those damage are*

included a low resistance to infective agent, chronic enteritis, diverse types of colic, bothers with reproduction or, the most probable hypothesis, a general uneasiness condition represented by performance diminution.

**Is the toxic potentiality of a poisonous plant the same for every species of animals?**

An other important point to consider is the specie-specificity: not all the poisoning plants the horses are damageable for other species of animals or at least, at the same dosage and vice versa. For example: the digitalis strongly toxic for all the animals, will be of less concern for horses compare to bovines; the oaks (*Quercus*)leaves and acorns, eaten by deer and peccaries, will lead to foal intoxication if ingested in the pasture, especially after a hot summer where grass is run out.



*Quercus robur*



*Erodium cicutarium*

On the contrary, the senecio (*Dendrosenecio kilimanjari*) or the brackens (*Pteridium aquilinum*) can create severe symptoms even one month after continuous ingestion.

In the case of the brackens (*Pteridium aquilinum*) specifically, the symptoms will normally strictly appear after 30 days of hay administration containing this essence or grazing fresh in an infested pasture.

The age of the horse is also a factor to observe in term of problematic plant intoxication. Young horses got less enzymes to resist the action of toxic plants, obviously beyond weakened and recovering subjects, who ask major attention.

In which concrete case should we then consider a plant



The symptoms of poisoning, not always easy to identify, will be characterized by a progressive weakening of the animal that can: becomes drowsy in term of behavior and general aspect, has a lower temperature compare to the normal standard, develops mouth ulcers, shows head compression signs, has red-brown urine are make convulsions.

**How to recognized an intoxication?**

The time between the toxic plant ingestion and the symptomatic onset is also to take in account. For example, the ingestion of a *Conium sp.* or *Erodium cicutarium* horse lethal dose, will gives little hours to the horse life and we will then observe a rapid symptom insurgence.



*Senecio jacobaea*



*Pteridium aquilinum*

intoxication? First of all, the horse has a natural born instinct to normally chose in the pasture, the best herbs leaving apart the others. This is moreover true for horses, that

since the beginning of their life, had been habituated to stay in wide paddocks. The problem will generally observe with young foals, still inexperienced, or in some "too tight" stallion paddocks. In fact, we need to pay high attention when we face a situation where the paddock dimension is small-

er then necessary, overused by the animals and where horses have eaten all the good hay and bored, start to feed with unwanted flora.

Obviously, horses always pent in a box are at "risk subjects" because receiving rarely green diet, they haven't develop enough their selective instinct for herbs and are simply attracted by any fresh herbs when they are suddenly at disposition.

### Specific distinctions between plants

A particular distinction in the toxic plant description can be done between toxic trees for horses, offhanded and cultivated herbs. In the first category, beyond Yew (*Taxus*), we find many essences cultivates or used as hedge, that will be ingested only by inexperienced horses often hold in the surrounding of the city, like the Cherry Laurel (*Prunus laurocerasus*), the Buxus sp., the Black Locust (*Robinia*



*Prunus laurocerasus*



*Robinia pseudoacacia*



*Rhododendron ponticum*



*Rhododendron luteum*



*Cytisus laburnum*

*acris, repens, flammula; Caltha palustris*) which have diverse toxicity level and appear to be safe when included in a well prepared hay.

Poisoning symptoms are: general inflammation, skin irritation and narcosis. As mention before, two species of this family are especially dangerous by maintaining their toxicity in the hay which are: *Hellebores* (*Helleborus* genus)



*pseudoacacia*), the *Rhododendron* sp. (*Rhododendron ponticum* and *Rhododendron luteum*) and *Cytisus laburnum*.

The most important offhand herbaceous toxic plants will be described in the following lines bellow. Concerning intoxication done with cultivated plant we can mention the one done: with clover (*Trifolium hybridum*, *Trifolium repens*, *Trifolium incarnatum*), related to the rising spring and those links with beet consumption that particularly have leaves rich in oxalates.

Among poisoning offhand plants present in Europe, we can find almost all the *Ranunculaceae* family (*Ranunculus*



*T. hybridum*



*T. repens*



*T. incarnatum*

and Monkshood (*Aconitum napellus*). Specifically for them, the ingestion will lead the horse to: depression, convulsions, paralysis and short term death (some hours for *Aconitum napellus* and some weeks for *Helleborus* genus). An other plant problematic family for horses in Europe are the *Apiaceae* or *Umbelliferae* referring for example to



*Aethusa cynapium*



*Oenanthe crocata*

*Cicuta virosa*, *Conium maculatum*, *Aethusa cynapium* and *Oenanthe crocata*.

Acknowledged to attack the nervous system with their diverse damaging components, this is of major concern for Arabian horses often involved in dressage. The intoxication level for horse is situated between 0,5 and 2,5 kg of plant depending on the species and will cause narcosis and paralysis.

### Some families of toxic plants

Composite family containing among others the *Senecio iacobaea*, known to be toxic fresh or dry due to different active principles. In this case of plant ingestion, we observe



*Equisetum sp*



*Sinapis arvensis*

From the Scrophulariaceae or the figwort family, the Common Foxglove or Purple Foxglove (*Digitalis purpurea*),

still toxic in the hay at small dosage, will create hallucinations, cardiac rhythm alterations and convulsion.

The most dangerous plant for horse among Brassicaceae family, also called Cruciferae, is wild mustard or charlock (*Sinapis arvensis*). Native from Europe and well profuse on the territory, the plant contains seeds that induce episodes of acute gastroenteritis and colic even taken in hay.

Finally, in the Solanaceae family we have to quote: the Bittersweet (*Solanum dulcamara*), the black nightshade,



a long term and cumulative toxic effects described by a particular degeneration status of the liver and damages on blood vessels. The "target organ" in this situation is the liver, but can also be affected the kidneys and lungs. Horses will develop symptoms some weeks and even some months after the ingestion; some of those can suddenly die, while some others will manifest a long term sickness related with hepatic impairment and subsequently show liver and nervous systems problems

Among Polypodiaceae family, bracken (*Pteridium aquilinum*) will induce a poisoning status similar to the one created by the ingestion of *Equisetum sp.*, commonly known as horsetails and scouring rushes.



*Solanum dulcamara*



*Datura stramonium*



*Atropa belladonna*



*Hyoscyamus niger*

sunberry, or wonderberry (*Solanum nigrum*), the Jimson Weed (*Datura stramonium*), the deadly nightshade or belladonna (*Atropa belladonna*) and the henbane (*Hyoscyamus niger*) that all have high toxicity even in hay. □