

## Introduction

Personal interest in equine veterinary medicine and veterinary toxicology, approach to better understanding (symptoms, complications, intoxication process) and establish useful tools and aids (diagnoses, treatments, their prevention), contemplating the current modus vivendi of most equines today.

### Cardiotoxicity and arrhythmias

Sudden Death (roads and highways, parks and gardens)  
**Volatile irritant oils and taxine alkaloids. *Taxus baccata*.**  
Diagnosis: Heart injuries in a horse after a lethal exposure to *Taxus* (although the intact parts of the plant are not identified in the stomach directly).  
**Cardiac glycosides. *Nerium oleander*.** Detection: digoxin and oleandrin in serum (liquid gastrointestinal, fluid samples, fecal sample). Hospitalization: arrhythmias, azotemia.



## Objectives



### Autonomic nervous and central nervous systems

**Topane alkaloids (hyoscyamine, scopolamine and atropine) *Datura stramonium*.**

(freshly cut hay or in corn for silage)  
Severe impact colic and difficult to treat most of the time. Sequelae (cardiac) → Death  
Ingestion of a few seeds may lead to severe signs.



### Non-exertional rhabdomyolysis

**HGA and MCPG (*Acer negundos, Acer pseudoplatanus*) SPM & AM** (pasture, seeds)  
Samples of healthy horses (can develop the disease shortly)  
Importance as diagnostic markers for its detection.  
Treatment: CCA, activated carbon.  
Differential diagnosis: *Malva palviflora*.



### Hepatic encephalopathy

**Pyrrolizidine Alkaloid (PA) *Senecio spp*** (hay, silage and even contaminated pellets).  
Direct analysis of pyrrole-protein complexes in the blood through proteomic methods (marker capable of reflecting exposure in horses). Severe liver damage may be irreversible.



### Alkaloid toxins and anthraquinones *Cassia*

***occidentalis***. (feed, cereals)  
Severe ataxia and acute death without any clinical signs presented in this presentation.  
No clinical sequelae in some horses (post-treatment).



### Liver, heart and CNS damage

**Thiaminase, alkaloid nicotine and piperidine alkaloids. *Equisetum Palustre***. (hay) Horses are highly susceptible to marsh horsetail (thiamine deficiency).  
**Piperidine alkaloids (Coniine and  $\gamma$ -coniine) *Conium maculatum***. (pasture) Pregnant mares, fetal malformations and abortions, teratogenic congenital defects. Initial diagnosis (greater chance of survival).



### Abortions in mares and symptoms GI

**Ranunculin, Protoanemonine. *Ranunculus bulbosus***. (pasture)  
Lactating mares and foals (particularly affected).  
Toxic effects on GI tract microbes.  
Diagnosis: recovery and resolution of clinical sign.



### Enzootic Calcinosis

**Glycosides, biologically active analogues of vitamin D3. *S. glaucophyllum, Trisetum flavescens***. (pasture and hay)  
Calcification produced by soft tissues, blood vessels, tendons and ligaments, lungs, heart and kidneys (mineralization processes).



### Neurologic syndrome

**Alkaloid of indolizine. *Astragalus spp* and *Oxytropis spp*** (seaweed). Palatable plants. Detection **Swainsonine in serum sample**. Every aspect of reproduction is affected, including congenital skeletal defects, abortions and reproductive disability.



## Conclusions

Presence of intoxications in horses in the veterinary since 1906 in a professional way. The importance of proper detections, diagnoses and treatments are essential but lack of studies and enough knowledge still continue today. Management: limitation or total impossibility of access to larger areas of grassland. Meadows that do not have proper vegetation / poor conditions. Food: varied ratio of forage and concentrate which may be contaminated. Current difficulties: lower frequency of occurrence, considerable impossibility to carry out a correct detection and diagnosis before the unfavorable evolution / necropsy.

Significant function of veterinarians in the practice of the daily equine clinic.