Pyrrolizidine Alkaloids

Pyrrolizidine alkaloids are the most common cause of liver damage. Found in numerous plant species, pyrrolizidine alkaloids are most toxic for pigs, then poultry, cattle, horses, goats and sheep, with sheep being the least susceptible. These alkaloids cause photosensitization, liver and kidney damage and can also cause cancer and heart failure. Animals will not readily eat plants containing pyrrolizidine alkaloids, unless no other forage is available. However, plants become more palatable when dried and will be readily eaten in hay, with little loss of toxicity. Effects are cumulative, so symptoms may not appear until long after the toxic plant was eaten.

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<th>Common Pasture Plants Causing Pyrrolizidine Alkaloid Poisoning</th>
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<td><em>Amsinkia intermedia</em></td>
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<td><em>Cynoglossum officinale</em></td>
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<td><em>Senecio</em> spp.</td>
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<td><em>Symphytum</em> spp.</td>
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Provided by Karin Neff, Andy Hulting, Mylen Bohle and David Hannaway
Fiddleneck, *Amsinkia intermedia*

**Identification:** Erect two to three foot hairy annual. Alternate, lancolate hairy leaves. Orange-yellow flowers in terminal “fiddle-neck” raceme; flowers all on one side of the axis. Fruit a nutlet.

**Habitat:** Dry, cultivated soils and waste areas

**Animals Affected:** Horses, cattle and pigs

**Toxin Family:** Pyrrolizidine alkaloids

**Other:** Causes liver necrosis. Can also cause nitrate poisoning under certain conditions. Seeds are most toxic.

Provided by Karin Neff, Andy Hulting, Mylen Bohle and David Hannaway
Houndstongue, *Cynoglossum officinale*

**Identification:** One-to four foot biennial. Forms rosette first year with large oblong furry leaves. The second year it produces flowering stems with sessile leaves. Flowers are reddish purple in racemes. The fruit is a barbed nutlet, grouped in fours.

**Habitat:** Pastures, meadows, roadsides, disturbed areas.

**Animals Affected:** Horses and cattle.

**Toxin Family:** Pyrrolizidine alkaloids.

**Other:** Symptoms also include head pressing, straight-line walking, liver damage (prevents cell reproduction)
Rarely eaten when fresh, but more palatable (and still toxic) in hay.

Provided by Karin Neff, Andy Hulting, Mylen Bohle and David Hannaway
Ragworts/Groundsel, *Senecio* spp.

**Identification:** Various, species identification is often tricky. The genus can be identified by the presence of a single layer of touching (not overlapping) green bracts surrounding the flower. Generally lanceloate to ovate alternate leaves, often deeply pinnately divided. Composite flower heads in flattened terminal clusters with showy yellow ray flowers. Seeds with tuft of white hairs.

**Habitat:** Pastures, clearcuts, disturbed roadsides.

**Animals Affected:** All Livestock.

**Toxin Family:** Pyrrolizidine alkaloids – amounts varying with species and stage of growth, young plants being most toxic.

**Other:** Causes acute liver necrosis and quick death or chronic poisoning by ingesting small amounts over longer period of time (generally within 3 weeks) causing chronic liver disease. Wobbling, loss of appetite, lethargic, crusty eyes/nose, pig-like color, prevents liver cell reproduction. Not palatable unless other forage not available. Young leaves most toxic. Remains toxic in hay.

Provided by Karin Neff, Andy Hulting, Mylen Bohle and David Hannaway
Comfrey, *Symphytum* spp.

**Identification:** Clumped perennial with hairy, angular, hollow stems. Ovate to lanceolate coarse alternate leaves. Flowers in loosely coiled cymes. Bell-shaped, stalked flowers. Fruit a nutlet.

**Habitat:** Moist soils in open area, waste sites, field and ditches

**Animals Affected:** All livestock

**Toxin Family:** Pyrrolizidine alkaloids

**Other:** Causes liver damage if eaten in large quantities. Toxins concentrated in roots.

Provided by Karin Neff, Andy Hulting, Mylen Bohle and David Hannaway