

 nextmune

# Allergen Guide

Most relevant indoor  
and outdoor allergens



Tips to reduce allergen exposure



## Introduction

Allergy is a disease in which your horse's immune system reacts abnormally to everyday harmless substances.

Your horse can be exposed to these substances, also called allergens, by inhalation or ingestion, but most often due to direct contact of the allergen with the skin.

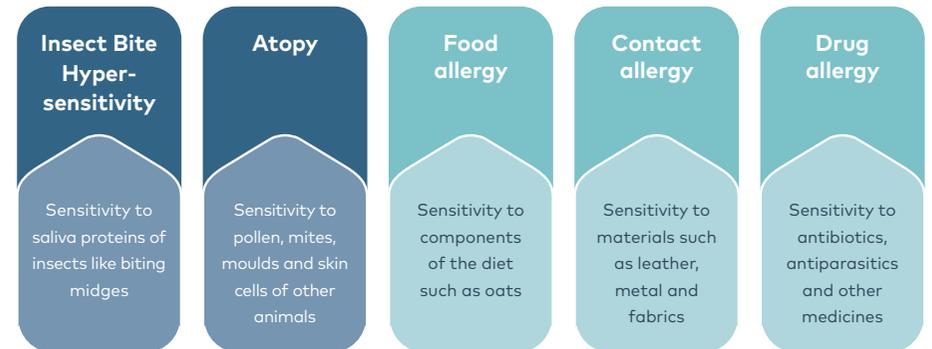
After exposure, the body recognises and labels these allergens as 'foreign' and starts producing inflammatory mediators which will initiate the allergic reaction.

Allergies can be hereditary but can also be developed over time after repeated exposure. In most animals, the initial signs of allergy start between 1 and 6 years of age.

## Types of allergies

The most common types of allergies are insect bite hypersensitivity and atopy, with some horses having both simultaneously. The symptoms of these different types of allergies can be very similar, making it often hard to distinguish.

The most relevant indoor and outdoor allergens responsible are described in this brochure.



For more information about allergy, please read our Horse Allergies brochure.

# Mites

These tiny spider-like insects are barely visible to the naked eye and often found in stables or barns all over the world. The droppings contain proteins that cause frequent and continuous allergic reactions in horses.

Mites thrive best in an environment with a high humidity and temperature. There are two main types of mites, **house dust mites** and **storage mites**.



## House dust mites

House dust mites feed on skin flakes of humans and animals.

Favorite areas are saddle pads, blankets, boots and grooming kits.

### Most common species

#### House dust mite

*Dermatophagoides pteronyssinus*



- Indoor allergen
- Allergy symptoms after contact with rugs and saddle blankets

Because this house dust mite seems to be more abundant in Europe than in America, it is also called the European house dust mite.

 **Ideal humidity** 70-85%  **Ideal temperature** 22-30°C

#### Farinae mite

*Dermatophagoides farinae*



- Indoor allergen
- Allergy symptoms after contact with rugs and saddle blankets

Animals are most often allergic to this house dust mite. The Farinae mite is the little brother of the House dust mite or *Dermatophagoides pteronyssinus*.

 **Ideal humidity** 70-85%  **Ideal temperature** 22-30°C



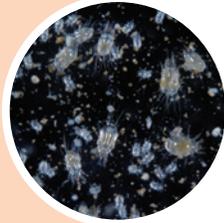
## Storage mites

Moulds that grow in foods, as well as the food itself are consumed by storage mites. They thrive in hay, grain, bedding and barn dust.

### Most common species

#### Copra mite

*Tyrophagus putrescentiae*



- Indoor allergen
- Allergy symptoms once the horse is stabled

The copra mite is found in bread, fruits, straw, decaying animals/vegetable matter, and dried milk.

 **Ideal humidity**  
70-85%  **Ideal temperature**  
25-32°C

#### Hay mite

*Lepidoglyphus destructor*



- Indoor allergen
- Allergy symptoms once the horse is stabled

Hay mites are found where plant or animal foods are processed and/or stored at a high humidity.

 **Ideal humidity**  
70-90%  **Ideal temperature**  
23-27°C

#### Grain mite

*Acarus siro*



- Indoor allergen
- Allergy symptoms once the horse is stabled

Main food sources are flour, other grain products, hay, and dried fruit.

 **Ideal humidity**  
70-85%  **Ideal temperature**  
22-25°C



# Tips to reduce exposure to storage mites

Storage mites are difficult to control, just like house dust mites. These environmental control tips can be helpful in limiting exposure.

## 01

Minimise dust in the barn and consider purchasing rubber mats to replace stall bedding.

## 04

Consider keeping the horse outside or restrict stabling.

## 02

Wash blankets, saddle pads and leg bandages regularly with 60°C hot water.

## 05

Wipe the muzzle with a damp cloth after finishing a meal to remove food remains and keep food buckets, bins and tubs clean.

## 03

Use airtight containers to keep food containers tightly sealed and store in a cool, dark and dry environment.

## 06

Reduce food stockpiles by buying smaller amounts. Maximum storage time should be 30 days.

## 07

Keep the humidity and temperature in the barn lower than 45% and 21°C, consider using a dehumidifier



# Insects

Insects can cause a lot of stress and their bites can be responsible for allergic reactions. Insects thrive best in an environment with water such as rivers, lakes and muddy areas. There are 3 important types of insects: Culicoides, Culex and Tabanus.

## Most common species

### Mosquito

Culex spp.



- Outdoor allergen
- Found worldwide

Culex breed in any form of stagnant water, but some can also be found in leaf axils, tree-holes, rock-holes and crab-holes. After biting, mosquitoes leave saliva behind in the skin. The proteins in the saliva can cause an allergic reaction.

These mosquitoes measure from 6-9 mm and attack humans and animals but also reptiles and amphibians.

**Airborne:**  
J F M A M J J A S O N D



### Biting midges

Culicoides spp.



- Outdoor allergen
- Found worldwide

Culicoides breed in water vegetation, slow running streams, damp soil, manure heaps and other damp, muddy areas.

Mostly horses and other farm animals get bitten near water. They typically attack at dusk or dawn.

Adult biting midges measure about 1-2 mm long. Besides nectar, females feed on blood which is needed for the maturation of fertilised eggs.

**Airborne:**  
J F M A M J J A S O N D



### Horse fly

Tabanus spp.



- Outdoor allergen
- Found worldwide

Tabanus species are found near water such as lakes and rivers. They prefer to fly in daylight and avoid dark areas. At night they are inactive.

Horseflies range in size from 6 to 25 mm and are known to be extremely noisy during flight.

The females give a painful bite to large animals and humans. They need the blood for the development of their eggs.

**Airborne:**  
J F M A M J J A S O N D



# Tips to reduce exposure to insects

## 01

Reduce exposure to insects by moving horses away from standing water, manure piles, compost and cattle.

## 03

Use fly sheets or masks sprayed with permethrin repellent, using a ± 32 x 32 per 2.5-cm grid meshing.

## 02

Stable the horse before dusk and until after dawn.

## 04

Place box fans within the stall.



# Pollens

Pollens are reproductive cells of grasses, crops, plants and trees. These super small pollen granules can be distributed by the wind for many kilometers. Millions of pollens can float in the air, especially on warm and windy days.

Horses are most often exposed to pollens through inhalation and skin absorption. The allergy symptoms are mainly seasonal and can be different for each grass, weed or tree.

## Grasses

Grasses are flowering plants that release pollens mainly from June until September. Grasses include cereal grasses, bamboos, grasses of natural grassland, cultivated lawns and pasture.

### Most common species



### Orchard grass

*Dactylis glomerata*



- Outdoor allergen
- Found worldwide

Orchard grass is a common grass which grows on roadsides, lawns, fields, banks, meadows and waste land.

It is mostly used for pasture and hay, but it is also planted for ground cover and soil stabilisation.

Orchard grass can grow 20-150 cm tall and the green-grey coloured leaves can reach a length of 35 cm. The spikelets can be 5-9 mm.

#### Flowers:

J F M A M J J A S O N D



### Timothy grass

*Phleum pratense*



- Outdoor allergen
- Found worldwide

Timothy grass is one of the most common grasses and grows in fields, meadows and on roadsides. In cooler, humid climates.

Timothy grass is commonly found in hay and is sown in pastures for forage. It is the most extensively cultivated grass of meadow grasses.

This grass can grow 50-150 cm tall and the flowers can be 75-150 mm long and 6-13 mm broad.

#### Flowers:

J F M A M J J A S O N D



### Perennial ryegrass

*Lolium perenne*



- Outdoor allergen
- Found worldwide

Perennial Ryegrass is common on disturbed sites, pastures, meadows, fields, lawns, roadsides and even in clearings.

Perennial Ryegrass is used as a winter season pasture and forage grass, this is due to its high resistance.

The plant grows 30-60 cm tall and it produces unbranched stems with spikelets on alternating sides.

#### Flowers:

J F M A M J J A S O N D



### Kentucky bluegrass

*Poa pratensis*



- Outdoor allergen
- Found worldwide

Kentucky bluegrass is found in prairies, fields, forests and mountain meadows. It is common along roadsides, dunes and lawns.

Kentucky bluegrass is a highly palatable pasture grass and is also used for lawns and turf.

This grass grows 30-70 cm tall with 10 to 30 cm long leaves. It prefers cool, humid climates. It produces green or purple panicles.

#### Flowers:

J F M A M J J A S O N D



### Bermuda grass

*Cynodon dactylon*



- Outdoor allergen
- Found worldwide

Bermuda grass is a common tropical grass and is found on waste sites, roadsides, pastures, agricultural fields, riparian areas and orchards.

Bermuda grass is used as a lawn and pasture grass, especially in dry areas.

This grass will grow about 20-50 cm high. It produces 2-5 narrow 2-6 cm flowering spikes at the top which are clustered together.

#### Flowers:

J F M A M J J A S O N D



## Crops

A crop is a plant that can be grown and harvested extensively for profit or subsistence. Most crops are cultivated in agriculture. Crops flower from spring to summer, depending on the species.



### Most common species

#### Cultivated oat

*Avena sativa*



- Outdoor allergen
- Cultivated worldwide

Oats may escape cultivated fields and can be found in dry wasteland and meadows, especially in heavier soils.

Oats are used to make oatmeal and cereals, but are also used to make beer and other alcoholic beverages.

This annual grass grows 120 cm tall and the seeds ripen in August. The two-flowered spikelets are up to 2.5 cm long.

#### Flowers:

J F M A M J J A S O N D



#### Cultivated rye

*Secale cereale*



- Outdoor allergen
- Cultivated worldwide

Rye can escape cultivated beds and be found along roadsides, wastelands and open rangeland.

Rye is used for flour, bread, beer and other alcoholic beverages such as whiskey, beer and vodka.

This grass grows 1-1.5 m tall. The bushy spike is a 7 to 15 cm flower head. The kernels are about 8 mm, oblong and light-brown.

#### Flowers:

J F M A M J J A S O N D



## Weeds

Weeds are flowering plants that are often unwanted in farm fields, gardens, lawns, and parks.

They release pollens mainly from June until October.



### Most common species

#### Stinging nettle

*Urtica dioica*



- Outdoor allergen
- Found worldwide

Nettle is found in open areas and meadows often near buildings. It has been used for salads, soups, tea, colouring and as a curdling agent.

Stinging nettle is a fast-growing weed and can reach a length of 1-2 m.

The leaves are covered with poison-filled hairs which discharge their poison when touched. This results in a burning sensation and a rash.

#### Flowers:

J F M A M J J A S O N D



#### Common mugwort

*Artemisia vulgaris*



- Outdoor allergen
- Found worldwide

Mugwort is most common on rubbish heaps, roadsides, sites of demolished buildings and a variety of other disturbed environments.

Mugwort is difficult to control. It is used for pain relief, treatment of fever and used as a diuretic agent.

This weed grows about 1-2 m tall. The dark green leaves are pinnate and 5-20 cm long, with dense white hairs on the underside.

#### Flowers:

J F M A M J J A S O N D



#### English plantain

*Plantago lanceolata*



- Outdoor allergen
- Found worldwide

English plantain is found on grasslands, roadsides and cultivated ground. It often invades lawns and gardens.

This perennial weed can reach a maximum height of 50 cm. The 5-40 cm dark green leaves are oblong or lance-shaped.

The spike stands on a grooved stem which is greenish-brown and flowers from the bottom to the top.

#### Flowers:

J F M A M J J A S O N D





## Lamb's quarter

*Chenopodium album*



- Outdoor allergen
- Found worldwide

Lamb's quarter or common Pigweed is found in horticultural, wild landscapes, roadsides, but also in pastures and forages.

It is not only regarded as a weed in crop fields, but can also be cultivated and used for animal feed. This 15-150 cm weed has oval-spearhead-shaped leaves with dense, coarse hair. The green-grey flowers are produced by 5-20 cm panicles.

### Flowers:

J F M A M J J A S O N D



## Dandelion

*Taraxacum officinale*



- Outdoor allergen
- Found worldwide

Dandelion is an abundant weed found in lawns, meadows, fields, roadsides and wastelands. It is sometimes cultivated.

This weed is used to make dandelion wine, salads, medicines and coffee substitutes.

It has deeply toothed leaves and grows 50 cm tall. It can flower again in autumn.

In warmer climates it can flower all year.

### Flowers:

J F M A M J J A S O N D



## Sheep or red sorrel

*Rumex acetosella*



- Outdoor allergen
- Found worldwide

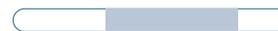
Sheep sorrel is commonly found on acidic, sandy soils in lawns, fields, pastures, meadows, wasteland and along roadsides.

The leaves have a lemony, spicy flavor and are used in salads, soups and as garnish.

This weed grows about 10-60 cm tall and produces small orange-yellow or red-orange flowers. The leaves often turn red in autumn.

### Flowers:

J F M A M J J A S O N D



## Common ragweed

*Ambrosia elatior*



- Outdoor allergen
- Found worldwide

Common ragweed is found in woodland and wasteland. It grows on dry fields and pastures, along roadsides and in disturbed soil.

The pollens are very small and easily distributed by the wind. In the afternoon the pollen release is at its highest.

Common ragweed can grow up to 70-90 cm. The soft leaves are pinnately divided and hairy. They can have a length of 3-13 cm.

### Flowers:

J F M A M J J A S O N D



## Trees

Trees are perennial plants with an elongated, wooden trunk that support branches and leaves. Depending on the species, flowering occurs at the end of the winter or spring.

### Most common species



### Birch

*Betula pendula*



- Outdoor allergen
- Found worldwide

Birch grows in woods, particularly where the soil is lighter. It often grows in heath lands and clearings and is also planted in gardens.

The bloom is usually short. Before they unfold their leaves, they shed enormous quantities of pollens.

They have a silvery, smooth bark. It can grow 20-25 m tall. The flowers (catkins) produce winged seeds and are widely distributed by the wind.

#### Flowers:

J F M A M J J A S O N D



### Hazel

*Corylus avellana*



- Outdoor allergen
- Found worldwide

This shrub can be found at forest sides, but is also cultivated for its nuts. It grows both in the shade and in the sun.

Hazel can reach 2-7 m and is an aggressive spreader. It not only distributes by pollens, but also by nut-eating birds.

The flowers (catkins) are produced before the leaves. Hazelnuts grow in clusters on the Hazel tree. The leaves are 6-12 cm long.

#### Flowers:

J F M A M J J A S O N D



### Elm

*Ulmus americana*



- Outdoor allergen
- Found worldwide

Elm grows in woods and hedges, meadows, fields, shores of rivers or lakes, swamps, growing on moist land.

This tree was often planted in urban settings as ornamental. It can grow up to 40 m tall.

Drooping, greenish-red flowers appear in late winter or early spring. The 1.5 cm long fruit is oval and flat and has papery wings.

#### Flowers:

J F M A M J J A S O N D



### Willow

*Salix viminalis*



- Outdoor allergen
- Found worldwide

Willow grows in wet environments, such as river-banks, lake shores and in drier sites where bare soil becomes available.

Willow is a deciduous shrub or small tree that can grow 8 m high. The flowers (catkins) appear in Spring.

The fruit is small and contains seeds. The seeds have long, silky, white hairs, which allow the seeds to be distributed by the wind.

#### Flowers:

J F M A M J J A S O N D



**Sycamore**  
Platanus  
occidentalis



- Outdoor allergen
- Found worldwide

Sycamore is a deciduous tree which is native to lowland areas, typically reaching its largest size along streams, rivers and flood plains.

Sycamore was formerly extensively planted as a shade tree and can grow up to 30 to 40 m high.

Yellow-red, small flowers give way to fruit balls which gradually disintegrate during Autumn. Seeds disperse with the wind.

**Flowers:**  
J F M A M J J A S O N D



**Black alder**  
Alnus glutinosa



- Outdoor allergen
- Found worldwide

Black alder thrives in moist soils near rivers, ponds and lakes. Sometimes it grows in mixed woodland and on forest edges.

This deciduous tree grows under favourable circumstances to a height of 20 to 30 m.

The buds are purplish-brown and have short stalks. Catkins form in autumn and remain dormant during the winter. The catkins flower in March.

**Flowers:**  
J F M A M J J A S O N D



**Olive**  
Olea  
europaea



- Outdoor allergen
- Found worldwide

Olives grow in plantations, woods, and as shrub in dry, rocky places. It is grown on 5 continents and it is famous for its fruits and oil.

The olive is very commonly cultivated in Mediterranean climates. It develops small, white, feathery flowers.

Olive trees are small and can grow up to 8-15 m. The silvery green leaves are 4-10 cm and oblong. Olives are harvested in the green to purple stage.

**Flowers:**  
J F M A M J J A S O N D



# Tips to reduce exposure to pollens

Because pollens are airborne, it is not possible to completely avoid them. The following tips can help to limit the exposure.

01

Restrict outdoor activity and only put the horse to pasture in the morning, evening or after rainfall when pollen numbers are low.

03

Move the horse to a different environment or a different barn.

02

Keep windows and doors of the barn closed on warm and windy days and open them when pollen numbers are low.

04

Use dry blankets, saddle pads and leg bandages while inside.

05

Minimise dust in the barn.



# Moulds

Horses are sensitive to mould spores. Moulds release spores to reproduce and can be easily distributed by the wind. Moulds are mainly found outdoors, but can also grow indoors when spores enter stables through windows or doors.

Moulds give allergy symptoms throughout the year with a peak in spring and autumn. They can be found on damp surfaces such as walls, ceilings, floors, windows and window frames.

## Most common species

### Aspergillus fumigatus

Aspergillus fumigatus



- Outdoor and indoor allergen
- Found worldwide

Aspergillus occurs in soil, stored foods and on wet surfaces (bathrooms, basements and refrigerators).

Flowers:  
J F M A M J J A S O N D



### Alternaria alternata

Alternaria alternata



- Outdoor and indoor allergen
- Found worldwide

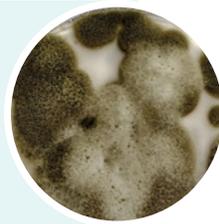
Alternaria occurs on soil, food, plants, textiles, on walls and window frames in damp environments.

Flowers:  
J F M A M J J A S O N D



### Cladosporium herbarum

Cladosporium herbarum



- Outdoor and indoor allergen
- Found worldwide

Cladosporium grows on soil, but also on leather, rubber, paper and wood.

Flowers:  
J F M A M J J A S O N D



# Tips to reduce exposure to moulds

Moulds are very common in the air, but they do not often cause allergic reactions in pets. If your horse is allergic to moulds, follow these tips to limit the exposure.

## 01

Remove moulds from damp environments and surfaces with a fungi cleaner.

## 05

Dry clothes and bedding outdoors instead of indoors.

## 02

Consider keeping the horse outside or restrict stabling.

## 06

Feed hay outdoors or consider another type of hay.

## 03

Lower the humidity and increase ventilation indoors,.

## 07

Minimise dust in the barn.

## 04

Avoid forest walks in autumn or in humid weather.



# Why Artuvetrin® Therapy?

Complete allergen avoidance is not practical in most cases. Not only are most of the allergens difficult to avoid, allergy to multiple allergens is challenging to address through avoidance.

## What is Artuvetrin® Therapy?

Artuvetrin Therapy is a medical treatment where very small amounts of allergens (pollen, mites, moulds, etc.) to which your horse is allergic are injected subcutaneously (beneath the skin) in increasing amounts.

The goal is to change the immune system's response so that it becomes less sensitive or not sensitive at all to those allergens. As a result, the allergic reaction and symptoms will decrease or disappear, as well as the need for other short-term medications.

More information about this treatment can be found in the Horse Allergies brochure.



Artuvetrin® Therapy is the only licensed immunotherapy in Europe\* and therefore the product of choice for horses under the European directive 2004/28/EC.



\*Licensed in the Netherlands

# What else can be done in combination with Artuvetrin® Therapy?

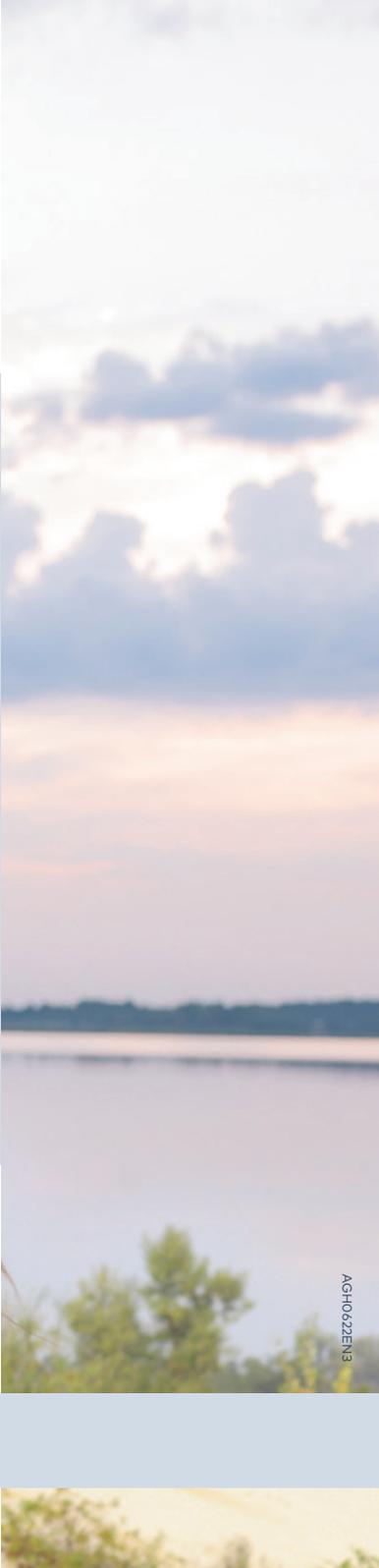
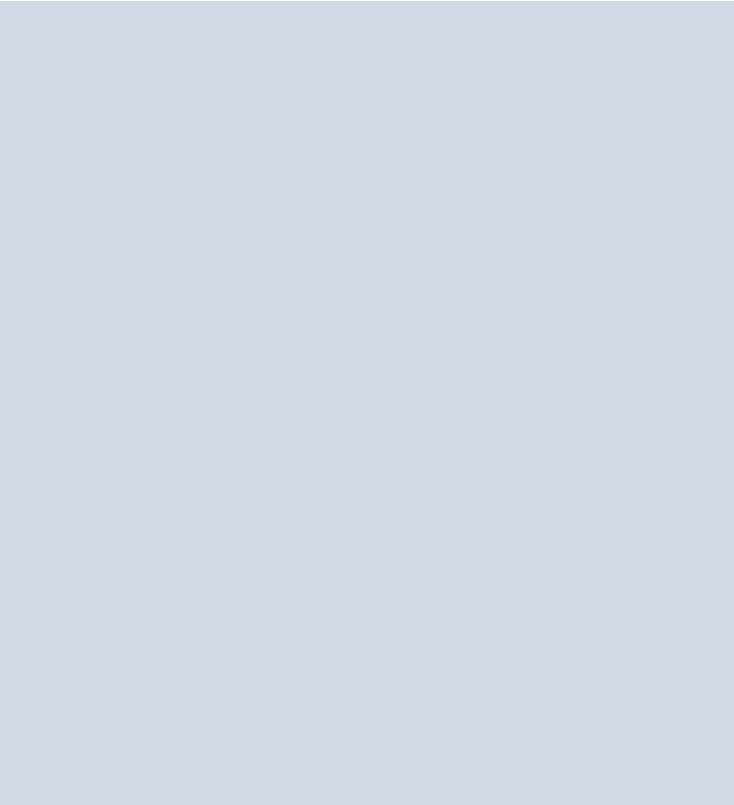
## Short-term symptomatic medication

With Artuvetrin® Therapy, most horses show improvements within a few months, but it can take up to 12 months before the treatment gives noticeable results. Therefore it might be necessary to give short-term symptomatic medication at the beginning to ensure your horse is comfortable and its symptoms are under control. Discuss with your vet how to control your horse's symptoms in the meantime.

## Supplements and shampoo

Dietary skin supplements and baths can also improve your horse's skin and reduce allergy symptoms. Ask your vet for the most suitable products for your horse.





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