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Nutritional Minute



PART 2

Selenium: how much is in your horse's diet?

FDA sets safe level for average horse

The FDA has set a daily recommended level of selenium for an "average" horse at a total of 3 mg per day. This is a very safe level of selenium consumption and well below the maximum tolerable or poisonous limits. (See Nutritional Minute, Part I – Selenium.) When determining if your horse's diet contains adequate selenium, you can use this average as a good reference point but since each horse is an individual and has individual needs it is best to work with your veterinarian or nutritionist to determine his or her exact requirements. In some cases a horse may need more than the 3 mg per day.

Sources of selenium in your horse's diet

The selenium in your horse's diet can come from multiple sources, such as pasture, hay, grain, or commercial feeds and supplements. The level of selenium in hay and grass varies greatly, depending on the area in which it was grown. Testing your hay and pasture is not hard to do and is beneficial on multiple levels. Contact your local extension office to obtain information on how to take samples and where to send them for analysis.

Commercial feeds and supplements are required to list the level of selenium they contain on the label or feed tag. Water may also contain selenium, especially in areas with selenium-rich soils.

Calculating what your diet provides

Your challenge is to figure out exactly how many milligrams of selenium your diet is providing daily. The selenium content is listed in several ways, depending on the label, tag or analysis you are referring to. Converting these numbers to milligrams (mg) and adding them up to get the total amount consumed in a day isn't as hard as you may think.

Selenium expressed in milligrams (mg)

Selenium (Se) levels may be expressed as mg of Se per a specific quantity of feed. If this is the case, your first step is to carefully review the guaranteed analysis (GA) on the label and determine the quantity of the product it represents. Is the GA number telling you the milligrams of Se found in 1 pound of product or in 2 ounces?

Next you will need to find the serving size and how many servings are recommended per day. The serving size is stated on the label. Once you determine how many servings per day your horse is consuming you can multiply that number by the mg of selenium per serving and find out just how much Se that portion of the diet is providing.

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Natural Vitamin E
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For example: The GA on your vitamin E and selenium supplement label states that it provides 1 mg of selenium per 7 grams of supplement and that you should feed one scoop per day.

What the label tells you:

7 grams of supplement contains 1 mg of Se

7 grams (g) = to one (1) serving

One (1) serving = to one (1) scoop

1 scoop is the recommended feeding amount

What you figure out:

One serving (7 g) of your supplement is providing 1 mg of selenium per day.

Remember to read labels and tags carefully. Sometimes the guaranteed nutrient analysis will not be based on the same amount as the serving size. Take the time to determine how much selenium is provided per serving!

Selenium expressed in parts per million (ppm)

Other labels and feed analysis will express the amount of selenium in ppm, or parts per million, which is an expression of concentration. In this case, the easiest thing to do is convert ppm into milligrams (mg). Don't run screaming into the night yet; this is easier than you think.

Use the conversion:

X ppm Se = X milligram (mg) of Se in every kilogram (kg) of feedstuff

In simple terms:

1 ppm Se = 1 mg/kg of feed

.5 ppm Se = .5 mg/kg of feed

And so on...

Because we do not commonly use kilograms as a measure of weight, let's start by converting the kilogram portion of the equation into pounds.

Use the conversion:

1 kilogram (kg) = 2.2 pounds (lbs)

Now you have the concentration in terms of pounds.

X ppm Se = X milligrams of Se in every 2.2 lbs of feed

Here is an example:

Your hay analysis reports that your grass hay contains .1 ppm of selenium. You feed 12 lbs of hay each day.

What you know:

.1 ppm Se means your horse is getting .1 mg of Se in every 2.2 lbs of hay he eats.

To make it easier, figure out how much selenium he is getting daily in 1 lb of hay:

Divide .1 mg by 2.2 lbs = .045

Your horse is getting .045 mg of Se in every pound of hay he eats.

You feed your horse 12 lbs of hay per day.

12 pounds times .045 mg Se per pound = .54 mg of Se consumed daily.

Now try it with the analysis on your feed bag. For example, it says the feed contains .6 ppm Se and you feed 5 pounds of grain per day.

.6 ppm Se = .6 m Se in every 2.2 lbs of grain
Or
.2723 mg Se in every 1 lb of grain
5 lbs times .272 mg Se = 1.36 mg Se consumed daily.

Adding it all up

Add together all the portions of the diet and you get the mg of Se consumed by your horse in each day. Remember, the FDA has set a very safe level of 3 mg per day for an average horse, but some horses need more. Once you calculate the amount in your diet, check with your veterinarian or nutritionist to see if the level is correct for your horse.

Amount of Se in our example diet:

12 lbs of hay = .54 mg Se
5 lbs of grain = 1.36 mg Se
1 scoop of supplement = 1 mg Se

If your soils are Se-deficient:

Water = none
Grazing = none

Total selenium consumed daily = 2.9 mg

Over-supplementation can be avoided

Modern management practices mean that horses often need several supplements at a time to support their needs. Since each horse is an individual their requirements vary. Consult with your veterinarian or nutritionist to set the correct nutrient requirements for your horses.

Many different types of supplements contain selenium. Take the time to read each supplement label and calculate how much, if any, selenium each supplement is contributing to your horse's diet. Consult regularly with your veterinarian or nutritionist when making changes to your horse's diet. Know what part of the country your hay comes from and test it on a regular basis.



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