

Re: Arsenic and cattle

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- *From:* Bob <bbx107@xxxxxxxxxxxxxxxx>
 - *Date:* Tue, 14 Feb 2006 21:40:53 -0800
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On Tue, 14 Feb 2006 20:57:02 -0700, "N:dlzc D:aol T:com \(\dlzc\) " <N:dlzc1 D:cox T:net@xxxxxxxx> wrote:

I had made an unsupported statement about a year and a half ago that cattle required a small amount of arsenic in their diets to survive. I was asked for any sort of literature support and found very little at the time.

<http://www.ead.anl.gov/pub/doc/arsenic.pdf>

"Depending on the amount ingested, arsenic can be beneficial (animal studies suggest that low levels of arsenic in the diet are essential) or adverse (high levels can be toxic)."

<http://horse.purinamills.com/bulletins/poison/lamenessinducing.html>

"The toxic effects of selenium in ruminants varies, depending on the amount and rate of its absorption, the individual animal's susceptibility, the type of selenium present in the plant, and the interaction of selenium with other elements, such as sulfur, arsenic, or copper, in the diet. These minerals, and possibly others, competitively interfere with selenium absorption by ruminants. If this also occurs in horses, adequate amounts of these minerals in their diet may help reduce selenium poisoning for them, although currently this hasn't been demonstrated."

Still no real pointers to peer reviewed literature... but, if you have healthy cattle, you have some arsenic. This is beef, milk, and ground or surface water near where they "eliminate". And arsenic is not limited to cattle...

David A. Smith

I am commenting on this based almost entirely on what you posted above. I have no specific knowledge about arsenic requirements.

Re: Arsenic and cattle

There is nothing wrong with the possibility that something normally considered toxic is also required at low levels. This per se is common enough.

However, the case stated above is very weak.

First, saying that low levels may be "beneficial" does not mean it is "required".

Second, if the (only) reason it is beneficial is due to competing with Se, then it would not be required if the Se level were adequate (or low). (And you may know that Se is a good example of an element that is beneficial at low levels, and toxic at higher levels, with a rather low margin of safety between the good and bad levels.) That is, it does not imply a requirement for As per se.

Interesting question. I'd be delighted to see some hard data. But of course, it is very difficult to get hard data on trace nutrients in the real world. Lab work, with rodents eating chemically defined diets, is hard enough!

bob

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