From the desk of Mogens Eliasen, for immediate release

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When Labels of Mineral Contents are Misleading for the Uninformed...

Manufactures of mineral supplements and drugs for medical purposes do know very well what chemical processes they use internally to create the products they sell. Nevertheless, the labeling of them often leaves the consumer completely in doubt of whether or not a given product is adequate for a given purpose that is not claimed on the label.

In some cases, this might be due to lack of consideration, but it could also be a deliberate attempt to increase the apparent value of the product...

Using Zink as example

Most people know at least the name of the metal Zink, and many also know that "Zink" in small quantities are essential for the body. Also, many medical drugs contain Zink as well.

However, very few people think about the fact that Zink, the metal, is *not* what the body needs... The pure metal is completely impossible to digest. In powdered form, it is outright dangerous to eat, because it is extremely reactive.

So, when you take a Zink supplement of some kind, it will not be the metallic Zink you ingest. Hopefully not...!

Instead, you will take some kind of Zink compound - a chemical that contains positively charged Zink ions together with a negatively charged anion of some kind. There is a chemical bonding between the Zink and the anions. For some compounds, it is fairly weak, so the main attraction between the Zink ions and the anions is caused by the electrical charges. Such Zink compounds are generally easy to dissolve in water, where the Zink ions will be totally surrounded by a shell of water molecules that easily can be replaced with other chemicals that might want to react with the Zink ions.

A common example of such a water-soluble Zink compound is Zink Acetate that consists of Zink ions and Acetate ions. When moist, it will smell of Acetic Acid (vinegar). This is a form of Zink supply that provides the Zink in a form that is extremely available to the body (the surrounding water molecules are sitting quite lose). However, it is also very reactive, so it may not always reach its destination before it found something to react with.

Now, if the chemical bonding between the Zink ions and the anions is stronger, this situation changes dramatically. There are many examples of Zink compounds that are essentially completely insoluble in water because of strong chemicals bonds between the Zink ions and the anions. Zink Oxide and Zink Sulfide (common minerals) are such examples. Their value to the body is virtually nil, because the Zink ions are not free! The strong bonding to the anion must be broken before such Zink can be made available for the body's metabolism. And it takes very potent and reactive chemicals to do that - which the body generally does not possess.

But in-between those extremes (water soluble Zink compounds and completely insoluble compounds) is a whole range of chemicals that show a more moderate bonding between the Zink and the anion. This might even result in a bonding whose strength can be altered through simple chemical adjustments of pH!

A very important group here is the Zink Chelates. A Zink Chelate consists of Zink ions with the corresponding negative ion being an organic structure (often an amino acid) that will totally encapsulate the Zink ion. This can create a bonding that can be very tough to break under certain chemical conditions, but sometimes relatively easy to break when those conditions change.

Most "Chelate complexes" of Zink are water soluble and chemically quite stable and hence not poisonous. However, it may also not be easy to get to react with anything else - unless the chemical conditions in the body where it is supposed to be used are adjusted to make the bonding weak between the Zink ion and the Chelate ion.

So, the "Zink power" of a Chelate is not only dramatically less than for Zink Acetate that virtually supplies free Zink ions, ready to react with just about anything - it is also strongly dependent on the specific chemistry of the specific Chelate anion and the body's local chemical environment.

In conclusion, it will most likely make a huge difference for the effect of the medication or supplement *which one* is in the drug... Zink Acetate and Zink Chelate MIGHT be interchangeable under very specific circumstances - but chances of that happening in the complex body chemistry are very slim.

The chemical measurement of "Zink" - the big traitor….

Then, I should add another definition of "Zink", which is often used on labels to mislead people who do not know chemistry...

"Zink" is used as a measure of the total amount of Zink (free metal), Zink salts of any kind, and other chemical compounds of any kind that contain the element Zink, without specifying the nature of the chemical environment or the specific bonding this "Zink" is occurring in. This comes from the standard chemical analysis of metallic elements (the cheapest and fastest you can pay for). This analytical method is based on evaporating the sample in a white-hot flame, in which everything literally gets split into atoms, regardless

the original chemical structure. The concentration of free Zink atoms in this super-heated gas is then measured optically and calibrated to be converted into a measure for the concentration of "Zink" in the original sample.

When "Zink" (or any other mineral) is measured this way, ALL information about the original chemistry goes lost.

So, when you read "Zink" on a label, you have no clue what forms of the element we are talking about - it could be a dangerous form, a harmless inactive form, a reactive form, or a useful form.... you cannot tell from the information "Zink"....

So, the term, "supplementing with Zink" is meaningless, unless you specify what kind of Zink compound you are actually using...

Now, for medical purposes, doctors and vets might simply be sloppy about naming the products and just call them "Zink", but there could also be some dishonest marketing buried in this - there are lots of examples of smart chemists outfoxing lawyers and bureaucrats that don't have a clue of this....

You can substitute any other metal for "Zink" in this example - and the same conclusions will apply.

So, "Zink" and "Zink" are not necessarily the same. One can have great value for certain purposes, and the other can be completely valueless - or maybe outright harmful.

"Buyer Beware"...

Mogens Eliasen

Mogens Eliasen holds a mag. scient. degree (comparable to a US Ph. D.) in Chemistry from Århus University, Denmark and has 30+ years of experience working with dogs, dog owners, dog trainers, and holistic veterinarians as a coach, lecturer, and education system developer. He is the author of several unique books about dogs and responsible care of dogs, available from www.k9joy.com. He publishes a newsletter "The Peeing Post" containing lots of tips and advice on dog problems of all kinds, particularly about training, behavioral problems, feeding, and health care.

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