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Aren't metals poor, inadequate antigens to use in immuno-testing?

The short answer regarding elemental metals being an inadequate complete antigen is essentially *YES*. For the most part, they are terrible complete antigens. Some might be more capable than others of serving as an acceptable antigen or immunogen, but when taken by themselves, antibody stimulation by elemental metals will be very poor. As you might suspect, however, this is not the proper question to ask when determining whether or not antibody detection is an appropriate testing base for individual sensitivity to the metals.

Antigens can be quite complex. They may range from simple molecules all the way up to highly developed membrane of cellular structures. The entire antigen body or structure, however, is rarely involved in the role of determining how specifically targeted antibodies will be programmed and produced. Rather, a *portion* of the antigen body will be the active stimulant in the antigen processing mechanism. That portion will be referred to as the *hapten*. The balance of the antigen body becomes essentially a carrier for the hapten. The hapten is the entity which serves as the principal 'key' in the familiar 'lock-and-key' specificity fit between antigens and antibodies.

When metals are found in the body, they can become problematic when they dissociate, ionize or otherwise become actively bindable. Their introduction may have come from a bio-materials placement, from food or beverage, or as part of mineral salts which have entered through a variety of acquisition portals. The metal ion will bind readily and rapidly with available substances in the body such as an amino acid, peptide, protein, saccharide or a ligand of some sort. Once bound, the body to which the metal has attached takes the role of being the carrier and the metal becomes a major part of the hapten.

While metals are poor complete antigens, they are marvelous haptens. The metals can elicit a very marked specific immune response and can stimulate antibody production when the body interprets the metal as being foreign and toxic for the individual patient. Once the antibodies have been formed against the metallic hapten, the carrier may or may not remain important to the overall immune response. The bare hapten can interact very well with the formed specific antibody. This presents an excellent basis for *screening the patient* for evidence of an existing sensitivity with metals. The metallic antigen challenge used at the lab bench in screening for patient serum antibodies in the Clifford Materials Reactivity Testing program relies on very high purity soluble metallic salts.

It is important to remember that such testing is a qualitative test system, and not a quantitative test system. It provides a simple 'yes / no' determination to indicate that the patient does or does not show specific antibodies against the metallic challenge, and that the antibodies are present at or above a clinically relevant threshold level. There is no determination of degree of sensitivity. We can simply say that there is sufficient antibody present to represent a valid clinical immune response in the patient and not just a simple noise-level response to a nuisance immune encounter.

Occasionally, it is possible to have a metallic hapten react with antibody formed against another kind of metal. A good example of such cross-reactivity can be seen between cadmium and beryllium. This does not alter the clinical value of the screening testing because these metals will likely interact with reach other's antibody in-vivo just as readily as they do at the bench. Thus, if one such metal is adversely reactive in the patient, the other will

probably also be adversely reactive. The doctor will want to avoid placing the either metal in the specific patient's body.

Another factor to bear in mind is that some metals can serve as adjuvants, or amplifiers, of irritability for other substances. Metals such as ionized aluminum, mercury and nickel can lead to intolerance of restorative materials, foods, medications, contact items and environmental factors. When offending metals are actively released from tissue binding sites in the body through detox regimens and competitive binding activities such as chelation, patients may report dramatic changes for better or worse in their ability to tolerate previously placed restorative substances or in their ability to handle certain foods, etc. This may help to account for observed changes in testing reactivity patterns taken a period of months or years after initial screening.

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