Are apatite nanoparticles safe?

The biosafety of nanomaterials has attracted much attention recently (April 7, p 1142). Surprisingly, no extensive studies have yet been done on “engineered” nanoparticles in relation to adsorption, biodistribution, metabolism, and excretion.

Calcium phosphate (apatite) deposition in soft tissue is common in inflammatory and autoimmune diseases, and is a threat for organ damage. Yet apatite particles have diseases, and is a threat for organ inflammation and autoimmune deposition in soft tissue is common on “engineered” nanoparticles in relation to adsorption, biodistribution, metabolism, and excretion.

Figure: Follow-up of laboratory worker’s antibodies against calcifying nanoparticles during 12 year-follow-up

 Conjunctival pouch exposure to calcifying nanoparticles occurred at 60 months. The ELISA test is done for a serum dilution of 1:500. Measuring range is 0–8 U/mL and values >8 U/mL are presented as 8.

Studies are needed on the mechanisms of these potentially pathogenic particle-mediated immunological reactions. Because of this researcher’s documented strong immune response against calcifying nanoparticles, we recommend testing and caution before using fine-grained apatite in applications requiring insertion into the human body.

Nanobac Pharmaceuticals is the manufacturer of the ELISA kits used in this research. NC and EOK own stocks in that company.

*Neva Ciftcioglu, Katja M Aho, David S McKay, E Olavi Kajander neva.ciftcioglu-1@nasa.gov


Department of Error

Wong T, Mitchell P. The eye in hypertension. Lancet 2007; 369: 425–35—In this Review (Feb 3), the name of the first author should have been Tien Yin Wong.

The Lancet. DfID’s health strategy. Lancet 2007; 369: 1973–74—In this Editorial (June 16), the second sentence of the third paragraph should have read: “For instance, it is already largely agreed that many if not most of the Millennium Development Goals will not be met.”