

Test identifies toxic platinum and palladium without time-consuming sample pretreatment

November 14 2008

The painstaking process of detecting toxic species of platinum and palladium mixed in with the form of platinum essential to certain pharmaceuticals could be reduced to one simple step, University of Pittsburgh researchers report in the Nov. 14 online edition of the *Journal of the American Chemical Society (JACS)*.

A fluorogenic solution developed in the laboratory of Kazunori Koide (Ko-ee-deh), a chemistry professor in Pitt's School of Arts and Sciences, glows bright green when it comes in contact with the poisonous forms of palladium and platinum known as Pd(II) and Pt(IV), respectively. These two elements are typically broken down into the platinum species Pt(0), which is used in medications to suppress various reactive oxygen species responsible for inflammation and other maladies. But residual amounts of Pd(II) and, particularly, the more toxic Pt(IV) can remain and pose a health risk.

To root out Pd(II) and Pt(IV) requires the removal of other metals and impurities before testing. Koide's method provides a fast, easy, and inexpensive alternative, he said. Moreover, current analysis cannot detect Pt(IV) in Pt(0) samples at levels below 2,000 parts per million, Koide said. His technique can indicate Pt(IV) content as low as 2 parts per million.

"Our method does not require any pretreatment," Koide said. "Just add the solution to the sample. Our technique detects even minute traces of toxic palladium and platinum in hours instead of days. It could reduce

pharmaceutical development time by weeks and help in making a safer product."

Koide began this project after a major pharmaceutical company contacted him about research he published in JACS in 2007 regarding a fluorogenic indicator for detecting palladium/platinum deposits in soil samples. It relied on a colorless fluorescein-based solution that—when exposed to blue light—glows green when it comes in contact with palladium, which coexists with platinum in nature. The Pd(II)/Pt(IV) detector involves the same fluorogenic solution used in a different way.

The current paper can be found on the JACS Web site at pubs.acs.org/cgi-bin/abstract...p/abs/ja8065539.html

Source: University of Pittsburgh

Citation: Test identifies toxic platinum and palladium without time-consuming sample pretreatment (2008, November 14) retrieved 30 April 2024 from <https://phys.org/news/2008-11-toxic-platinum-palladium-time-consuming-sample.html>

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