

Simple new method detects contaminants in life-saving drug

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(PhysOrg.com) -- The blood-thinning drug heparin is highly effective when used to prevent and treat blood clots in veins, arteries and lungs, but earlier this year its reputation as a lifesaver was sullied when contaminated heparin products caused serious allergic reactions that led to a large number of deaths.

Now, University of Michigan researchers have demonstrated a simple, inexpensive method for detecting contaminants in heparin, a development that could prevent such tragedies in the future.

The new method is described in a paper published online Nov. 14 in the journal *Analytical Chemistry*.

The method relies on potentiometric polyanion sensors originally developed in the lab of U-M researcher Mark Meyerhoff as a tool for detecting heparin in blood. In the latest work, Meyerhoff and coworkers show that the disposable sensors also can be used to distinguish pure heparin from heparin that is tainted with small quantities of oversulfated chondroitin sulfate (OSCS), the culprit in the recent deaths.

"In this technique, the magnitude of the voltage you get from the sensing membrane is dependent on polyion charge density," Meyerhoff said, "and because the contaminant has a higher charge density than heparin, the method allows us to detect the contaminant in the presence of excess heparin."

The new method is simpler and less expensive than analytical methods such as nuclear magnetic resonance (NMR) and capillary electrophoresis (CE), which have been suggested for detection of OSCS contaminants.

Meyerhoff, who is the Philip J. Elving Professor of Chemistry, envisions the procedure being used on site in drug manufacturing plants to screen raw materials or finalized, biomedical grade heparin products for contaminants.

Meyerhoff's coauthors on the paper are graduate student Lin Wang and former graduate student Stacey Buchanan, who is now a faculty member at Henry Ford Community College in Dearborn, Mich.

Provided by University of Michigan

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