

Letter to the Editor—Proposed Pharmaceutical Regulations for Skeletal Muscle Depolarization Drugs

Sir:

In this issue of *JFS*, two papers are presented that report on the analysis of a skeletal muscle depolarization drug, pancuronium bromide, used by a respiratory therapist to murder patients in a hospital setting. During the investigation, the facts of this case also identified another drug, succinylcholine chloride (SCC), that could have also been used to kill victims. However, although sought, this drug was not detected in any tissue or body fluid associated with the investigation. SCC is synthesized from two naturally occurring organic compounds (succinic acid and choline), and it has a very short half-life (minutes) in the body. A hydrolysis product of this drug is the half-ester, succinic acid monocholine.

Two recent cases, one in Florida and another in Missouri, were overturned because data that initially implicated SCC in questioned tissue samples were judged unreliable. Analysis protocols attempted to isolate and identify the half-ester of SCC in these specimens. However, the half-ester of SCC was also found to be present in aged control samples, thus obviating its evidentiary value.

Due to the lethality and illicit use of such drugs in homicides (e.g., Pavulon, SCC, Vencuronium, etc.), the pharmaceutical industry should implement the incorporation of isotopically labeled analog species into their formulations to facilitate definitive identification in questioned specimens. Therapeutic preparations containing stable-isotope-labeled parent drug, or isotopically tagged

buffers used in these preparations, would provide diagnostic signature compounds in degraded tissue specimens. In addition, for more reliable accountability, future control measures should also implement newly designed and uniquely shaped and/or colored vials as containers for skeletal muscle depolarization drugs. Until forensic toxicology develops a definitive test to unambiguously identify the presence of SCC in aged tissue samples, its illicit use in a health-care setting can easily go undetected. Isotopically labeled preparations of this drug would greatly assist future homicide investigations. We therefore urge regulatory efforts to change the manner in which these drugs are packaged, handled, and controlled in hospital settings.

Brian D. Andresen, Ph.D. (Retired)
Forensic Science Center
Livermore National Laboratory
P.O. Box 808, L-235
Livermore, CA 94551

Patrick M. Grant, Ph.D.
Forensic Science Center
Livermore National Laboratory
MS L-231
Livermore, CA 94550

Mr. John McKillop (Retired)
Glendale Police Department
613 East Broadway
Glendale, CA 91206