Chemical Stability of Nitroglycerin (NTG) Tablets Carried in Ambulances of a Large Metropolitan System

Herman L, **Koenigsberg M, **Ward S, **Sloan E, * Miller L*

* Program in Emergency Medicine
  University of Illinois College of Medicine
  Chicago, Illinois, USA
** Chicago North EMS System, Illinois Masonic Medical Center
  Chicago, Illinois, USA
+ Loyola University Stritch School of Medicine
  Chicago, Illinois, USA

Objective: To determine the amount of active nitroglycerin (NTG) tablets carried on advanced life support ambulances.

Design: Laboratory assay of the percentage of active NTG in the sublingual tablets (0.4 mg).

Setting: Urban, public, and private EMS System.

Intervention: All NTG tablets were removed from the ambulances and assayed for active NTG. Tablets (0.4 mg) were ground and dissolved in 24% methanol/24% acetonitrile/52% water, and filtered. The amount of nitroglycerin then was determined by liquid chromatography. Testing was performed by an independent laboratory. The peaks were measured in millimeters and the percentage of active NTG was calculated by using the area under the curve methodology.

Nitroglycerin percent activity ≥80% is considered within therapeutic range of bioavailability. The NTG tablets were exchanged every 120 days times two and the amount of active NTG was assayed and calculated by the above method.

Results: The mean percent activity was 96.0 ± 6.7% (95% CI = 87–105%). The mean percent activity of the NTG which had an undetermined storage time is 96.6 ± 7.8%, while all NTG determined by liquid chromatography. Testing was performed by an independent laboratory. The peaks were measured in millimeters and the percentage of active NTG was calculated by using the area under the curve methodology.

Conclusions: The NTG tablets used for sublingual administration in an urban EMS setting appear to remain stable (greater than 80% active NTG) up to 120 days of ambulance storage, although there is a significant variability in the amount of NTG. Further evaluation is needed to determine optimal exchange time beyond three months.