



K9 Confirmation of Oleander Poisoning by LC/MS

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After attending this presentation, attendees will understand how to confirm oleander poisoning cases from blood and urine specimens. This presentation will impact the forensic science community by providing the toxicological data necessary to make diagnostic decision about the patient when oleandrin is detected by toxicological screening.

In this case a 60-year-old woman was brought to emergency room with initial symptoms of vomiting, diarrhea, and abdominal pain. The patient's heart beat was normal at the beginning but then sinus bradycardia was observed gradually. Information obtained from her indicated that she is a cancer patient and that she drank the juice of some leaves of the oleander plant (*Nerium oleander* L. - Apocynaceae) for herbal self treatment. *Nerium oleander* L. is a member of Apocynaceae family. Leaves from *Nerium oleander* were shown to contain 0.018 to 0.425% oleandrin (weight/wet weight). Oleander extracts have been used for the treatment of indigestion, malaria, leprosy, mental or venereal diseases but the unconscious usage may cause toxicity.

Blood and urine sample on admission was assayed for oleandrin, the major cardiac glycoside of *N. oleander*, which has a wide geographical range and ecological distribution throughout the world and also in Turkey. Both specimens were extracted with ethylacetate: n- heptan (1:1) solvent mixture at 9.5 pH. Additionally, some parts of the oleander plant such as one flower, two leaves and one bark were chosen for extraction. These parts were cut and crushed in a 50 mL flacon to obtain about 2 mL sticky juice and then this was diluted with 3 mL water and extracted with the same solvent mixture.

All separated specimens were performed on a highly specific LC- MS procedure with gradient elution. Using this analytical setting, the average retention time for oleandrin was 0.9 min. The major ions monitored for oleandrin were m/z **577** and **433** indicating total molecular weight and without glycosides form, respectively. The highest sensitivity for this assay was obtained with 70 eV.

Qualitative results of the blood and urine samples on admission were compared with the plant extracts. Also qualitative result of the blood sample with urine sample was compared with each other. The most important thing was that the patient recovered without using any digoxin antibody such as Digifab or Digibind.

This procedure provided the toxicological data necessary to make diagnostic decisions about the patient when oleandrin was detected by toxicological screening. Also LC-MS appears to be the method of choice for the forensic-toxicological investigation of poisonings by cardiac glycosides.

Oleandrin, Poisoning, LC/MS