ChemTox
STRATÉGIE ET INNOVATIONS EN TOXICOLOGIE

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INTERPRETATION OF ANALYTICAL RESULTS

On 4 April 2007, I have received a request to discuss the analytical issues from a report B031.1ATK.0.06.00.05/2007/13400/591, decision 543.

From the report I have access, the following analytical results were obtained :

- absence of organic compounds (from a given list) in both blood and urine
- lead (10 ng/ml in blood, not detected in urine), cadmium (6 ng/ml in blood, 2 ng/ml in urine), arsenic (not detected in blood and urine), strontium (25 ng/ml in blood, 180 ng/ml in urine), chromium (not detected in blood)
- absence of analysis in hair given the amount (3 mg) collected

These analyses demonstrate the absence (not found) of several classes of pharmaceuticals and drugs of abuse. Given the fact that the limits of detection were not mentioned, it is not possible to discuss the accuracy of these results. However, numerous potentially harmful compounds were not screened, including cardiac drugs (digoxin), neuroleptics, plant alkaloids, cyanid, volatiles, anaesthetic agents ...

Regarding the heavy metals results, some results are surprising :

- in urine, results are generally expressed in ng/mg of creatinine and not in ng/ml (to be homogenous with the excretion). This is the international standard.
- everybody has lead in his urine, the concentrations are in the range 0.01 to 5 ng/mg of creatinine (about 0;01 to 5 ng/ml). No lead was found !
- everybody has arsenic in his blood (2 to 20 ng/ml) and his urine (2 to 200 ng/mg of creatinine). No arsenic was found !
- although there is no established range of chromium, the results are generally below 10 ng/ml in blood and the element is always detectable

The lack of testing for some relevant elements in both blood and urine must be explained by the analysts that have performed the testing of M. Ocalan. Some important elements, such as antimony, mercury, thallium have been omitted.

Strontium concentrations are within the normal range for blood (5 to 50 ng/ml) and urine (20 to 400 ng/mg of creatinine). However, there is no discrimination of a potential radioactive source of strontium.

It can also be considered as very surprising not to have sampled enough hair specimen (3 mg) to undergo investigations. This is the only specimen that can document long term exposure to a specific poison. This has been mentioned in the minutes of the Forensic Medicine Institution (dated 8 March 2007, number 230/07 – 13400/1853). On the opposite, some results were available from the Forensic Medicine Institution (dated 12 March 2007, number 230/07 – 14274/1945), based on the analysis of 150 mg of hair (the procedure to collect the hair has not been described nor the time of sampling). Once again,

it can be considered surprising not to detect arsenic, as this element is present in everybody, with concentrations generally lower than 1 ng/mg.

The other concentrations can be considered as normal, in the physiological range, for all the tested elements, including chromium and strontium. Therefore, these results are not in accordance with our results. The color of hair, length of hair and other visual parameters have not been described, in opposite with international recommendations.

General comments

Obviously, it cannot be considered that a systematic toxicology analysis (STA) was achieved. The International Association of Forensic Toxicologists (TIAFT) has published guidelines, including a list of compounds of interest. In the case of Mr Ocalan, numerous toxic compounds have not been screened.

Given the fact that normal concentrations of some heavy metals were not detected in the hair attributed to Mr Ocalan, the accuracy of the method can be challenged. It is obvious that atomic absorption is less accurate than ICP/MS, the method that was employed by ChemTox (this method is published in the international literature, Kintz et al, J Anal Toxicol, 2006, 30, 621-623).

It would be interesting to request the raw data from the laboratory in order to evaluate them.

The origin of a second set of hair results is cautious. Why only 3 mg were sampled during the initial visit ?

From the report I have access, there is no data, comments, or investigations on a clinical point of view.

In conclusion, I strongly recommend, once again, that an independent scientist collect the hair specimen and that an independent (or even 2 or 3) laboratory do the analyses.

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