

The facts and inevitable expert conclusions regarding the fraudulent reporting of the instrumental analysis of the urine samples attributed to top athlete Ria Van Landeghem (Seoul Olympic Games, 1988)

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N.M. Faber, Ph.D.

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Independent (anti-)doping expert and former forensic scientist

1. The background: *scientifically undue pressure* (because directed) on the doping control laboratory

The facts:

- This was a so-called *preventive* doping test, one (1) day before the opening of the Olympic Games;
- Ria Van Landeghem (hereafter: RVL) was selected as one and only of the athletes representing Belgium, at the request of Rogge;
- Prince de Merode, president of the IOC Medical Commission, enabled this entirely unusual test;
- Dr. Park, director of the Olympic laboratory, personally collected the sample;
- The sample was therefore not anonymous, but directly linked to a name.

The actual state of affairs implies two types of pressure:

- There was apparently a suspicion (why else this 'preventive' test?), resulting in the substantive pressure for the laboratory (more precisely: for the analyst(s)) to deliver what in essence amounts to the very reason of existence of a doping control laboratory, namely a positive result;
- There was a significant time pressure anyway, because of the start of the competitions, hence from the operational perspective, a practical opportunity to carry out the usual checks to prevent a false-positive were not in place.

This brief overview should convincingly demonstrate that the samples attributed to RVL did *a priori* not receive a chance for a *scientifically* correct treatment, i.e. the routine analysis of a sample, for which the laboratory after all received its IOC accreditation.

2. The demonstrably *intentional* tampering with the *only* evidence of doping

In Appendix 1 (originally numbered as BIJLAGE 3) one finds the fraudulent reporting of the final result of the analysis of A-sample, B-sample and Oxandrolone standard, respectively.

It immediately stands out – also for a layman – that the following essential data have been *manually* rendered unreadable, or this has at least been attempted:

- sample code and date for A-sample;
- signals for A-sample;
- sample code and date for B-sample;
- signals for B-sample;
- sample code for standard (why has the date been left intact?);
- signals for standard.

In my opinion there can be no doubt concerning the *intentional* character of these operations. After all they have been carried out *manually*, N.B. by the *same analyst*.

All of this happened for reasons which one can only guess, provided one does not know the extraordinarily exceptional background. And what did this background in essence amount to? The laboratory (more precisely: the analyst(s)) was under pressure to do what it has once been established for (= deliver evidence against cheating athletes), and so it was done.

I claim: the fraudulent manipulation of the *only* evidence against RVL is demonstrably the only thing in this case which is truly 100% certain, in addition to the *undue pressure* (because directed) on the doping control laboratory.

One even has to doubt the origin of the samples, as it has been attempted to make the codes unreadable by the *same analyst*. N.B. codes that cannot even be correct since the code number of the reporting is not exactly the same as the code number of the sample collection.

It is stressed that this evaluation is separate from the question of guilt. As an expert, I'm guided by the evidence adduced: what information can be gathered from the treatment of the only evidence? After all there is no supporting evidence. There was no supporting evidence prior to the Seoul Games and no supporting evidence became available afterwards, for example in the form of a positive test or confession of RVL c.q. witness testimony against RVL.

3. A-sample: analysis result declared positive for Oxandrolone while violating *logical* identification rules

One should be aware of the fact that in 1988 there were not yet technical documents applicable, as has long been commonplace under the regime of the World Anti-Doping Agency. Nevertheless, also in 1988 certain identification rules were considered as logical and therefore unquestionable. As an illustration I note that even current identification in this discipline is still inspired to a large extent by an article published in 1978:

J.A. Sphon

“Use of mass spectrometry for confirmation of animal drug residues”

Journal of the Association of Official Analytical Chemists, **61** (1978) 1247-1252

I will limit myself to two of current identification rules (see Appendix 2). The first one is:

“The signal-to-noise ratio of the least intense diagnostic ion shall be greater than three to one (3:1)”

That decision rule dated 2010 (same in 2003 Technical Document) does not exactly fall from the sky. Here, approximately 100 years after Einstein, one cannot speak of new insights. Both signal and noise are universal quantities hence their ratio is a universal quantity. The signal must exceed a multiple of the noise to justify a conclusion. The factor three (3) is generally accepted for applications where a false conclusion can have large consequences. If the consequences of a false conclusion are less grave, then of course one can settle for a less strict (read: smaller) factor, for example two (2). The critical factor depends on the application but will never be smaller than one (1).

Let us now return to the reporting in Appendix 1. The signals have been added manually, while the noise can be roughly estimated. A rough estimate suffices for the latter quantity, since the signal-to-noise ratio is adequately characterized with one (1) ‘figure behind the comma’.

Table 1: Estimated signal-to-noise ratio

Ion (amu)	Signal (abundance) ¹	Noise (abundance) ²	Signal-to-noise ratio
143	5677	10,000	0.6
308	1017	1900	0.5
321	504	1800	0.3
363	561	1800	0.3
378	128	1800	0.07

¹ Added manually, not objectively verifiable, ² Rough estimate, measured with a ruler.

It turns out that none of the signals satisfies the minimum requirement for the smallest signal (namely larger than 3), but miraculously the fingerprint of all signals (100, 19, 8, 10, 2; added manually, not objectively verifiable) strongly resembles the one of an Oxandrolone standard (100, 18, 8, 10, 2; added manually, not objectively verifiable).

Here it might be interesting to note that in 1988 Oxandrolone was a 'specialty' of the laboratory, the one from which it derived scientific prestige. In that very same year the following article was published:

J. Park, O. Kwon, H.-Y. P. Choo en J. Suh

"Quantitation of oxandrolone (a synthetic anabolic steroid) in human urine by GC/MS"

Korean Journal of Toxicology, 4 (1988) 117-129

Could this actually be an instance of the saying "seek and you will find"? I will return to that pressing question in the next section (reporting for the B-sample).

Let us now proceed with the second logical identification rule to which I would like to draw attention. Since 2010 a standard has to meet the following requirement (same in 2003 Technical Document):

"The concentration of Prohibited Substance, or its Metabolite, or its Marker should be comparable in the Sample and the spiked urine, Reference Collection sample, or Reference Material."

It is easily verified from the vertical axis of the plots in Appendix 1 that the (so-called) standard produces a signal that is approximately the 80-fold of the signal of the A-sample.

This observation immediately leads to the question: why did one not make a standard that would have been comparable to the A-sample with respect to concentration(s)?

For what is, after all, the definition of a standard in the current analytical context? Right, comparable! Stated differently: a (good) standard always had to meet this requirement hence also in 1988. Always.

I can think of nothing but a rush job, owing to the pressure of having to deliver instantly.

4. B-sample: clearly negative analysis result *fraudulently* manipulated and declared positive for Oxandrolone

And right now we arrive at the crux of this case, the part that really had (lasting) implications for RVL. No signals were measured for the B-sample at the time when Oxandrolone was to be expected.

This can be understood as follows. The reference signal is observed slightly sooner for the B-sample, when compared to the A-sample (8.12 min vs. 8.15 min; 8.15 is manually added for the A-sample; 8.12 is measured with a ruler for the B-sample).

As a result, one expects that Oxandrolone should be observed for the B-sample a fraction sooner than the manually added 7.37 min for the A-sample.

But guess what? Signals are made almost illegible for the B-sample that came later than measured for the A sample (namely at 7.43 min, measured with a ruler).

Furthermore, in contrast to the A-sample and the standard no numbers have been added manually.

However, those numbers are essential because they lead to the fingerprint that forms the basis of identification (and therefore a potential positive). It is easily verified by closer inspection of the plots that the measured signals do not meet the fingerprint of Oxandrolone.

Summarizing:

One discovers something in the A-sample (Oxandrolone?) that is not recovered from the B sample and one discovers something in the B-sample that is not recovered from the A sample!?

This all leads to the pressing question: why did one not search for the substance that caused the deviant signal for the B-sample? After all, one (read: same analyst) did bother for the A-sample: the deviant signal was due to Oxandrolone!

I reiterate: something has been found in the B-sample indeed. Was it by any chance a non-prohibited substance?

Here, then, appears to be considerable scope for speculation. One thing is certain: all relevant signals are erased and the B-sample is declared positive for Oxandrolone. All of this taken together makes it deception.

5. Inevitable expert conclusions: *undue* pressure at least led to *needless substandard performance* (A-sample), which in turn ended in equally *needless deception* (B-sample)

The reliability of an analysis result hinges on a properly functioning quality system. In layman's terms quality comes down to "Say what you do, do what you say and prove it".

It should stand to reason that in this (non)doping case we are far from long-standing and widely accepted principles.

Was this state of affairs imaginable if the laboratory had been able to work *routinely*? That's not plausible.

Nor is it plausible that Rogge and De Merode, as men of science, could not estimate beforehand the additional risk to the athlete as being unacceptable for the athlete. They have effectively put out of operation the quality system of the laboratory (leading to its IOC accreditation).

Let the following sink in. The analysis of the B-sample took place around 4:57 am. One (read: the same analyst) had to work at night to get a few things 'ready'. N.B. this was known to, in particular, Rogge.

Imagine this kind of treatment of evidence in a criminal case! What sanction was asked for RVL? Neither more nor less than two years exclusion of her profession.

Finally, in all of this it should be kept in mind that the resultant fraudulent reporting was made available to the defense of RVL only in the course of the proceedings, after insisting. Initially, there was only a statement of dr. Park, who personally collected the sample: 'positive for Oxandrolone'.