LEGAL AND BUSINESS JOURNAL

Strychnine

when a herbal medication for humans triggers a positive doping test

Doping: a case involving Strychnine

1. In this edition of Horse International we would like to discuss with our readership some thoughts on doping cases. In my daily practice I often represent athletes and horse owners in doping cases pending for instance before the Fédération Equestre Internationale (the "FEI"). In a recent case I represented an equestrian from the Middle-East who was very likely to be in the wrong place at the wrong time. That case involved Strychnine [C21H22N2O2, FW 334.41] and may illustrate that using medicines by humans may cause a positive doping test of an equine and lead to the violation of doping regulations.

Risk liability of the Person Responsible

2. Contrary to criminal proceedings the doping regulations worldwide assume that the person responsible (the term under the FEI jargon for the person accountable for the horse) is guilty until he proves otherwise. In other words, a presumption of innocence by the defendant / person responsible does not apply under the doping regulations. It is the person responsible who needs to prove that he/she is not guilty. Talking specifically about the equestrian sport it boils down to the following: the person responsible accused of the violation needs to demonstrate that he/she can explain how a specific substance got into the horse's system. Stating "I do not know" has no use. It is not an explanation at all. Under the doping regulations the strict liability principle applies. After proving how the medication got into the horse's system, the person responsible has to prove that he/she has not had "significant fault" or "negligence" in the violation of the doping regulations. The factual circumstances of the specific case are here crucial.

3. In connection with the above case of Strychnine the undersigned travel recently to a country in the Middle East. This in order to investigate the venue of the event where the violation happened and gather additional information.

Strychnine poison and herbal medicine

4. Strychnine is an alkaloid derived from the Strychnos nux-vomica tree. This tree grows in India is a deciduous tree native to India and to southeast Asia. Strychnine is a neurotoxin that inhibits the neurotransmitters glycine and acetylcholine in the central nervous system, interfering with the inhibitory effect of glycine on motor neurons. The effect of Strychnine is lowering of the threshold for muscle contractions. The clinical signs of a Strychnine overdose are spasms.

5. Extracts of the seeds and bark of the Strychnos spp. plants have been used over centuries as remedies for many conditions of humans especially in traditional medicine in India, China and southeast Asia. Traditional medicine in this part of the world recommends Nux Vomica for stomach problem, vomiting, abdominal pain, constipation, intestinal irritation, hangovers, heartburn, insomnia, certain heart diseases, circulatory problems, eye diseases, depression, migraine headaches, nervous conditions, problems related to menopause, and respiratory diseases in the elderly. In folk medicine, it is used as a healing tonic and appetite stimulant. Nux vomica is a common homeopathic medicine prescribed for digestive problems, sensitivity to cold, and irritability. In Hindi Nux Vomica may be referred to as: jahar, kajara and kuchala.

6. During the investigation in the country at hand in the Middle East the undersigned visited various pharmacies making inquiries about the availability of Strychnine. Strychnine was not available at those pharmacies. Neither it was available on the market. Inquiries were made into homeopathic and/or herbal medicines containing Strychnine like for instance Nux vomica. Again, we were told that Nux vomica was not available at the pharmacies. By the way, also when it comes to the use of Strychnine as rodenticide such was not registered in the respective country in the Middle East. It is a global trend that Strychnine containing rodenticide are being withdrawn from the market.

Irrelevant Urinary Concentration

7. The equestrian facility where the violation took place is in the Middle East. During the investigation on the location proved that there were no Nux vomica trees at the venue the seeds of which could have caused the cross-contamination. Strychnine is also not registered as rodenticide in that country. The rat poison used at the facility did not include Strychnine in it. The analysis of the A and B samples collected from the horse manifested a urinary concentration of Strychnine below 1% of what is expected from the therapeutic dose. In other words, Strychnine had no clinical relevance at all. Neither it had any influence on the performance of the horse. With regards thereto it should be mentioned that in 2002, the French Pharmacologist, Pierre Toutain, first acknowledged this concept and recommended that drugs whose effects are driven reversibly by plasma concentration, be

shutt*Nux vomica; prepared from the seeds of Stryhnos nux vomica, a native tree of Australia and the East Indies.*

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regulated by the determination of their irrelevant plasma/blood or urinary concentrations. Toutain is of the view that any level below 1% of what is expected from the therapeutic dose is consistent with an irrelevant Plasma or Urinary Concentration. The FEI does not recognize this concept (yet). An irrelevant Plasma or Urinary Concentration may influence the sanction as such but is not relevant for the violation itself.

Traditional medicine / human source of cross-contamination

8. In the science it has been also acknowledged that Strychnine in human urine is a significant risk for contamination of a horse. Strychnine is eliminated unchanged in the urine and may be present in concentrations in excess of 59 ng/mL. Getting back to our case at hand it appears that the box where the horse was situated was the most distant from the lavatories. Getting to a lavatory would mean going out of the FEI stables and passing through the main entrance of the indoor arena (100m – 200m). The investigation of the venue revealed that the vast majority of the employees were from India and more in general of Asian descent, therefore the countries were Nux Vomica grows and finds its applicability in traditional medicines. The ancient Indian medicine of Ayurveda recommends Nux vomica for treatment of various health issues. Strychnos nux-vomica tree is also, included in proprietary Chinese medicines, including "Maqianzi Powder", "Jiufen Powder", "Fengshimaqian Tablet", "Shufengdingtong Pill", "Shenjinhuoluo Pill", "Biqi Capsule".

9. Given that the venue employees many employees from India and Asian descent and that the horse in questions was the only horse tested positive on Strychnine during the Event with a relatively low dosage we believe that cross-contamination with human urine is the cause of the positive doping test. The toxicologist analyzing the samples A and B stated that the dosage was Irrelevant Urinary Concentration of Strychnine. The toxicologist also stated that the Urinary level of Strychnine in the horse was 0.6 ng/mL. If the horse had been exposed to the drug one to two hours prior to being tested at the event, the total dose of Strychnine required to achieve this inconsequential level of Strychnine would have been 510 ng. This level would have required less than a drop of urine from a human source contaminating the environment of the horse.

10. In this context we need to keep in mind the cultural background of the employees at the venue. Reportedly, it is not uncommon in India to urinate on street. At this moment further investigations are going on at the venue in order to interview the employees who worked there during the Event in order to find the source of this cross-contamination. The group of 300 Indian / Asian employees needs to be narrowed down to those who were at the venue during the event. Hopefully, this will lead to finding the source of contamination and meeting the threshold of explaining how Strychnine got into the horse's system.

Conclusion

11. This case demonstrates again the seriousness of the strict liability principle under the doping regulations in the equestrian sports. The person responsible may be exposed to various external risks he may not even foreseen and been aware of. Having investigated this case at the venue, seeing large number of the employees having unlimited access to the stables I think it is not surprising that so many – at first sight unexplainable - doping cases occur in the Middle East compared for instance to Europe or the United States. I am convinced that in many cases it is not the person responsible who is to blame for them. The FEI rules and regulations are very strict and it is obviously good that they are but on the other hand when an event is organized under the auspices of the FEI, it should the FEI who shall oblige the organizing committee to implement proper safety and security measures at the venue to mitigate the risks for riders and owners of the horses. ■

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If you have any questions and/or comments after reading this article, we would be happy to hear from you. You can also contact us for all equine-law related questions or matters. Please contact us via info@europeanequinelawyers.com or by telephone +31-(0)135114420.

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