

Survey of Supplements in the Australian Marketplace - Summary

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Introduction

Over the last fifteen years there have been a number of International studies looking at the levels of steroids and pro-hormones, and more recently stimulants, in commercial supplements, that are not declared on the label but are present on the WADA Prohibited List. The use of these supplements has the potential to result in an adverse finding if an athlete is tested according to the WADA protocols.

None of these studies specifically looked at the Australian marketplace, so the aim of the study was to evaluate a range of supplements readily available to Australian consumers, to assess the potential risk to competing athletes.

Methods

A range of supplement products were selected and purchased from a variety of outlets (both physical and via the internet). Products were chosen that were aimed to appeal to male and female athletes and included a range of product categories and formulation types.

Product categories included:

- Protein products – such as weight gainers, post workout recovery, muscle builders etc
- Energy products – such as carbohydrate-based products, stimulants, energy gels etc (but excluding energy & electrolyte drinks)
- Other products- including creatine, testosterone boosters, multivitamins, joint support formulations etc

Formulation types included powders, capsules, tablets, gels, bars, UHT milk drinks.

All samples were analysed for over 200 stimulants, anabolic steroids and other substances that appear on the WADA Prohibited List (2015) using GCMS and LCMS methods, capable of detecting anabolic steroids at levels of 10 parts per billion (ppb) and other substances at 100ppb.

Results

Of 63 samples analysed; 6 (10%) were positive for contamination with one or more stimulants and 4 (6%) positive for 1 or more steroids; overall 10 (16%) of products tested were found to contain WADA prohibited substances not declared on the label.

The most common stimulant identified was methylhexanamine (DMAA) followed by ephedrine; it should be noted that DMAA is banned for use in both therapeutic and food products in both Australia and the US, due to adverse health findings. The most frequently identified steroid was boldione, a precursor to boldenone.

A number of milk based products (such as whey powders and high protein UHT milk drinks) tested positive for low levels (<10ng/g) of Androstenedione; a known factor in milk.

We also found one product that contained significant amounts of cyproheptadine, an S3, Pharmacist only medicine, not declared on the label. Although this is not a WADA issue, it does demonstrate a concerning lack of quality control.

The most common formulation for contamination in this study was powders, followed by capsules. This is in contrast to other studies, where it has been predominantly capsules. This may be due to the substantial growth in the supplement industry over the last 10 years and the proliferation of powders for pre and post workout.

Of the 10 samples that tested positive; 2 had TGA Aust-L numbers and hence are required to be manufactured in a TGA licenced facility and 2 specifically sited their cGMP facility status – a requirement for Supplement manufacturers in the US under the FDA requirements.

The majority of positive supplements were made in the USA, although a number had unclear Country of Origin statements such as “Manufactured for...” “Distributed by...” rather than “Made in...”. This is contrary to Country of Origin statement requirements for Australia and was particularly true of supplements bought over the internet – even when purchased from Australian business websites.

Conclusions

Supplements that are readily available in store and on line to Australian consumers continue to pose a significant threat to competing athletes, due to the presence of WADA banned substances.

The most commonly found prohibited substance in this survey was DMAA, which was the most common stimulant identified in 2014 as an AAF (Adverse Analytical Finding) by WADA labs globally¹. Ephedrine, which we also identified in multiple samples, is in the top 10 stimulant AAF’s and is banned in competition when above 10µg/ml in urine.

A number of the positive samples were apparently manufactured in TGA accredited or cGMP (US) facilities, leading us to conclude that inadvertent contamination of raw ingredients may continue to be a factor in the presence of banned substances.

Although the steroids in particular were identified at low levels, the predominance of contaminated powders in this study shows the potential for increased exposure due to the volume consumed, particularly in comparison to capsules.

This survey reinforces the need for supplement manufacturers to have access to appropriate screening tests to ensure they protect their athlete consumers from inadvertent contamination, leading to a potential WADA anti-doping rule violation.

References

1. WADA 2014 Anti-Doping Testing Figures; by Laboratory
https://wada-main-prod.s3.amazonaws.com/wada_2014_anti-doping-testing-figures_full-report_en.pdf

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