

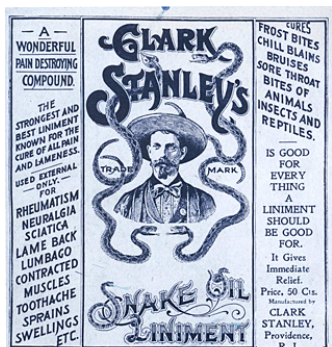
## Making decisions about supplement use

Ron Maughan

St Andrews University  
Scotland

Seminar "Targalt  
toidulisanditest"

31. augustil kell 11.00-16.00  
Technopolises



IOC Conference on Dietary Supplements and the Elite Athlete

Lausanne 2-5 May 2017

## What makes a great athlete?

Talent  
Motivation  
Training  
Trainability  
Avoiding injury



## Data from elite athletes

310 athletes competing in IAAF World Champs

Supplements were used by 86% of the athletes

Males 83%                      Females 89%

Reasons for using supplements were:

to aid recovery from training	71%
for health	52 %
to improve performance	46%
to prevent or treat an illness	40%
to compensate for a poor diet	29 %



"Individuals who use dietary supplements generally report higher dietary nutrient intakes and healthier diets in studies in which dietary data were also collected."

Rock (2007)

## In other words . . .

Those who take dietary supplements probably don't need them

Those who need dietary supplements probably don't take them

**Potential benefits of supplement use for elite athletes include:**

Correction of a nutrient deficiency that may impair health or performance

A specific performance benefit related to training or competition

## Development of optimum physique

Reassurance as to adequacy of nutrient intake

Financial gain by sponsor endorsement



## Supplements may be useful if:

A **diagnosed deficiency** cannot be corrected easily and promptly by changes to the diet

They can provide a **convenient** option

An athlete will not eat a **varied diet**

There may be a **beneficial effect** on health or performance with no risk

## The supplements environment

## Supplements are a multi-billion dollar business

Most of the money is made from recreational athletes and from non-athletes

Their concerns are different from those of the elite athlete



# Guaranteed Lowest Prices

## On All Leading Brand Supplements

**Over 12,000 Products In Stock!**

**SAVE UP TO**

# 70%

**MYOPEX 100**  
30 Serv.  
\$22<sup>99</sup>



**\$39<sup>99</sup>**

**PURE PROTEIN BARS**  
2.1oz  
\$22<sup>99</sup>



**\$39<sup>99</sup>**

**GLUTAMINE 600gms**  
\$34<sup>99</sup>



**\$53<sup>99</sup>**

**GLUTATHIONE 200mg**  
\$48<sup>99</sup>



**\$75<sup>99</sup>**

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## Issues in Supplementation

Efficacy: does it work? If so, under what conditions?

Safety: are there any possible adverse effects of acute or chronic use even in excessive doses?

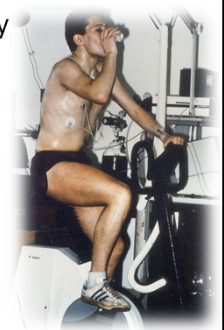
Ethics: is its use in sport legitimate?

## What can the scientists tell us?

Performance in laboratory tests varies by about 1-10% on a day to day basis

For an effect to be detected,  
it must be large relative to the  
daily variation

Small effects will appear as no effect





The difficulties in assessing efficacy are magnified many times when there is a less well-defined endpoint

Even with a very large investment of time and money, it is unrealistic to expect proof of efficacy in areas such as:

Wound healing    Muscle soreness  
Immune health    Joint health  
Weight gain    Weight loss

### "Responders" and "non-responders"?

	Before	After
Treatment X	49±3 s	49±3 s

**BUT**

50% of subjects improve by 2 s

50% of subjects worse by 2s

"Responders" cannot be identified from a single test

Repeated evaluations are necessary

Do female athletes/young athletes/elite athletes respond the same?

### Evidence of Safety?

People take risks in the pursuit of their goals

Elite sport is risky

Safety of supplements is often unknown



### Supplements with something to offer

Good evidence for performance effects for some athletes in some situations:

<b>Creatine</b>	Some evidence for performance related or health-related effects:	
<b>Caffeine</b>	Arginine/glutamine	Citrate
<b>Bicarbonate</b>	Carnitine	Colostrum?
	Echinacea	Glucosamine
<b>B-Alanine?</b>	Antioxidants	Vitamin C
	Omega fatty acids	Vitamin D
<b>Nitrate?</b>	Zinc	

### Supplements: Adverse effects



Some products contain impurities (lead, broken glass, animal faeces, etc) because of poor manufacturing practice



## Chicago Tribune

### Dietary supplements: Manufacturing troubles widespread, FDA inspections show

Agency has found violations of manufacturing rules in half of the firms it has inspected

June 30, 2012 | By Trine Tsouderos, Chicago Tribune reporter

Federal inspections of companies that make dietary supplements — from multivitamins and calcium chews to capsules of echinacea and bodybuilding powders — reveal serious and widespread manufacturing problems in a \$28 billion industry that sells products consumed by half of all Americans.

In the last four years, the U.S. Food and Drug Administration has found violations of manufacturing rules in half of the nearly 450 dietary supplement firms it has inspected, according to agency officials.

## Supplements: Adverse effects



Some products contain impurities (lead, broken glass, animal faeces, etc) because of poor manufacturing practice

Some products do not contain expensive ingredients listed on the label but only inexpensive materials

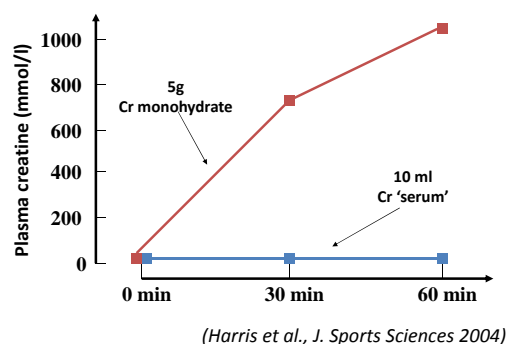
## "Creatine Serum"



"3 g creatine per ml"

"No side effects"

## Creatine Serum



**creatinewater.co.uk**

Welcome to creatinewater.co.uk offering the unique Creat® Creatine Water product. Please read about our new exciting product and then try our on-line store to purchase the product.

**At Last Creatine In A Drink!**

- No more preparation
- Faster absorption than with powder or tablets
- Easy and refreshing way to energise your workout
- Available in handy 1 litre cartons that contain 10mg Creatine Monohydrate
- No chemical additives - tested for water purity and stability
- Unique patented science
- As used by Japan's J League Soccer

**Take The Power Solution**

Creatine Water is the only product available of its kind in the UK. A unique and efficient way of taking creatine monohydrate, creatine water is the power solution. This product is only available in the UK from this site and through VinRob Limited, the UK's sole distributor. Order today for your Power Solution.

For more information email: [enquiries@creatinewater.co.uk](mailto:enquiries@creatinewater.co.uk)

Click here to purchase Creatine Water...

**Forbes / Lists**

MAR 12, 2015 @ 11:07 AM 325,394 VIEWS

## Lawsuits Say Protein Powders Lack Protein, Ripping Off Athletes

Alex Morrell, FORBES STAFF  
I cover the 'N' got my mind on their money and their money on my mind  
FOLLOW ON FORBES (112)

Bodybuilders, dieters, and athletes want the key macronutrient to help build or keep muscle, and have built protein sports supplements into a \$7 billion industry, according to Euromonitor. But companies including pharmacy giant CVS Health and MusclePharm, the \$110 million (sales) company that uses former Terminator Arnold Schwarzenegger in its advertising, may be selling products where the protein content falls far below what's on the label, according to a spate of lawsuits that have cropped up over the past eight months. "Arnold Schwarzenegger Series Iron Mass," for instance, contains half the protein stated on its label, according to third party testing in one lawsuit; Schwarzenegger is not named as a defendant in the complaint.

## Supplements: Adverse effects



Some products contain impurities (lead, broken glass, animal faeces, etc) because of poor manufacturing practice

Some products do not contain expensive ingredients listed on the label but only inexpensive materials

**Athlete specific problems:**

Some products contain doping agents that are not declared on the label!

## The IOC Study: Cologne, 2001

634 non-hormonal nutritional supplements were obtained in 13 countries from 215 different suppliers

11 different anabolic androgenic steroids were found

94 (15%) samples contained prohormones not declared on the label ("positive supplements")

No reliable data were obtained for 66 samples (10%)

Samples contained prohormones of nandrolone and testosterone

In most supplements, only trace levels were present

*For details, see: [www.dopinginfo.de](http://www.dopinginfo.de)*

## How does contamination occur?

Contamination may occur from two main causes:

1. Cross-contamination during the production process: the same equipment and storage facilities are used for supplements and for doping agents
2. Deliberate adulteration: many products are completely ineffective. Adding pharmaceuticals may mean that the consumer sees a benefit from using the product

## Can it be an accident?

Undeclared ingredients in supplements

Muscle building	Anabolic steroids
Tonics	Stimulants: caffeine, ephedrine
Weight loss	Anorectics, stimulants
"Male enhancement" Viagra, Cialis	



**"I Lost 27 pounds with Hydroxycut!"**

"Before Hydroxycut, I'd tried just about every diet and fat burner known to man...with little or no success. None of them helped me get the results I was looking for. After trying so much other products, I found it was time to try the real deal - Hydroxycut. In my first week, I lost 10 pounds. I felt great and energized. I lost 27 pounds in 12 weeks and kept the weight off for good. I'm a happy, healthy man now. The Hydroxycut and get into the best shape of your life - now!"

**Available at: CINCINNATI**

**www.hydroxycut.com**

**Stop using Hydroxycut products, FDA says**

Updated 6:04 p.m. EDT, Fri May 1, 2009

By Raunee Young  
CNN

**WASHINGTON (CNN)** – Hydroxycut products, popular dietary supplements used for weight loss, have been linked to liver damage and are being recalled, the U.S. Food and Drug Administration said Friday.

The FDA said it has received 23 reports of serious liver injuries linked to Hydroxycut products, which are also used as energy enhancers and as fat burners.

The reports include the 2007 death of a 19-year-old man living in the Southwest, which was reported to the FDA in March. Other serious liver problems reported included liver damage that resulted in a transplant in 2002, liver failure, jaundice, seizures and cardiovascular problems.

The FDA is warning consumers to immediately stop using 14 Hydroxycut products manufactured by Iovate Health Sciences Inc. of Oakville, Ontario, and distributed by Iovate Health Sciences USA Inc. of Blandell, New York.

The company is voluntarily recalling the following products: Hydroxycut Regular Rapid Release Capsules, Hydroxycut Caffeine-Free Rapid Release Capsules, Hydroxycut Hardcore Liquid Capsules, Hydroxycut Max Liquid Capsules, Hydroxycut Regular Capsule Packets, Hydroxycut Caffeine-Free Capsule Packets, Hydroxycut Hardcore Capsule Packets (Ignition Site), Hydroxycut Max Capsule Packets, Hydroxycut Liquid Shots, Hydroxycut Hardcore RTDs (Ready-to-Drink), Hydroxycut Max Aqua Shot, Hydroxycut 24, Hydroxycut Carb Control and Hydroxycut Natural.

According to the FDA, last year, Iovate sold more than 9 million units of Hydroxycut products, which were

**STORY HIGHLIGHTS**

- FDA recalls Hydroxycut products after 23 liver injuries and one death
- Hydroxycut products used as popular dietary supplement for weight loss
- Damage from product: liver failure, jaundice, seizures, cardiovascular problems

**Most Popular on CNN**

- 1 FDA: Stop using Hydroxycut items
- 2 Vegas entertainer Gena dies
- 3 Their own graduation
- 4 Image shows 6-year-old missing tot
- 5 What makes people happy
- 6 Split verdict in immigrant's death
- 7 Religious freedom violators named
- 8 flu virus spurs shift in etiquette
- 9 Astronauts honor 'space chimps'
- 10 White House already on a hunt for...

Journal of Clinical Gastroenterology:  
August 2009 - Volume 43 - Issue 7 - pp 672-675  
doi: 10.1097/MCG.0b013e318188be6d  
LIVER, PANCREAS AND BILIARY TRACT: Clinical Research

### Prolonged Intrahepatic Cholestasis and Renal Failure Secondary to Anabolic Androgenic Steroid-Enriched Dietary Supplements

Krishnan, Prashant V. MD; Feng, Zhen-Zhou MD; Gordon, Stuart C. MD

#### Abstract

The illegal enrichment of anabolic androgenic steroids in over-the-counter dietary supplements is well documented, but the health consequences have not been widely recognized. Three recent reports document cholestatic jaundice and nephropathy due to these compounds. We present 3 additional cases of anabolic androgenic steroid-enriched dietary supplement-induced hepatotoxicity and 1 case of renal failure, and we review the literature and the relevant features of this growing health concern. Recognition of this entity could obviate the need for invasive diagnostic testing and hospitalization and facilitate diagnosis and appropriate counseling.

**PULSUS** CANADIAN JOURNAL OF GASTROENTEROLOGY  
The Journal website | Subscribe | Submissions

Can J Gastroenterol. 2011 Mar; 25(3): 157-160. PMID: PMC3076034  
Language: English | French

**Acute liver failure caused by 'fat burners' and dietary supplements: A case report and literature review**

Y. Badha Krishna, MBBS,<sup>1</sup> V. Mittal, MD,<sup>1</sup> P. Grewal, MD,<sup>1</sup> M. Fial, MD,<sup>2</sup> and T. Sohi, MD<sup>3</sup>

Author information ► Article notes ► Copyright and License information ►

This article has been cited by other articles in PMC.

**Abstract**

Globally, people are struggling with obesity. Many effective, non-conventional methods of weight reduction, such as herbal and natural dietary supplements, are increasingly being sought. Fat burners are believed to raise metabolism, burn more calories and hasten fat loss. Despite patient perceptions that herbal remedies are free of adverse effects, some supplements are associated with severe hepatotoxicity. The present report describes a young healthy woman who presented with fulminant hepatic failure requiring emergent liver transplantation caused by a dietary supplement and fat burner containing usnic acid, green tea and guggul tree extracts. Thorough investigation, including histopathological examination, revealed no other cause of hepatotoxicity. The present case adds to the increasing number of reports of hepatotoxicity associated with dietary supplements containing usnic acid, and highlights that herbal extracts from green tea or guggul tree may not be free of adverse effects. Until these products are more closely regulated and their advertising better scrutinized, physicians and patients should become more familiar with herbal products that are commonly used as weight loss supplements and recognize those that are potentially harmful.

**HUFFPOST HEALTHY LIVING**

Front Page | Women | Taste | Good News | Parents | Style | Postcard | Religion | Weddings | HuffPost Live | All Sections

Healthy Living • Health And Fitness • GPS for the Soul • Health News • Sleep • Moments Not Milestones • Stronger Together • Life Handbook • Quiet Revolution

**10 Cases Of Liver Failure Linked To Dietary Supplements In Hawaii**

Printed: 09/07/2013 7:20 pm EDT | Updated: 09/07/2013 7:20 pm EDT

Ten young, seemingly-healthy people have been admitted into Hawaii hospitals in the last five months for varying degrees of liver inflammation and failure, and they only have one thing in common: They all took a certain dietary supplement for weight loss and/or muscle growth.

Yesterday, the Hawaii State Department of Health (DOH) announced an investigation into what could be causing the hospitalizations, some of which are "extremely severe" and even require liver transplants, according to State Epidemiologist Dr. Sarah Park.

"The only common finding among all cases ... is the use of a dietary or nutritional supplement for the purpose of weight loss and/or muscle gain in the past six months," the DOH stated in a press release yesterday.

**HEPATOLOGY**  
Official Journal of the American Association for the Study of Liver Diseases

Liver Injury/Regeneration

**Liver injury from herbals and dietary supplements in the U.S. Drug-Induced Liver Injury Network**

Victor J. Navarro<sup>1,\*</sup>, Huiman Barnhart<sup>2</sup>, Herbert L. Bonkovsky<sup>3</sup>, Timothy Davern<sup>4</sup>, Robert J. Fontana<sup>5</sup>, Lafaine Grant<sup>6</sup>, K. Rajender Reddy<sup>7</sup>, Leonard B. Seeff<sup>8</sup>, Jose Serrano<sup>9</sup>, Averell H. Sherker<sup>9</sup>, Andrew Stolz<sup>10</sup>, Jayant Talwalkar<sup>11</sup>, Manicruz Vega<sup>1</sup> and Raj Vuppalanchi<sup>12</sup>

Article first published online: 25 AUG 2014  
DOI: 10.1002/hep.27317

**Issue**

Hepatology  
Volume 60, Issue 4, pages 1399–1408, October 2014

Eight U.S. referral centers that are part of the DILIN from 2004-2013. Consecutive patients with liver injury referred to a DILIN center were eligible.

The final sample comprised 130 (16%) of all subjects enrolled (839) who were judged to have experienced liver injury caused by HDS.

45 had injury caused by bodybuilding HDS, 85 by non-bodybuilding HDS, and 709 by medications. Liver injury caused by HDS increased from 7% to 20% during the study period.

Bodybuilding HDS caused prolonged jaundice (median, 91 days) in young men, but did not result in fatalities or LT.

Liver injury from non-bodybuilding HDS is more severe than from bodybuilding HDS or medications, as evidenced by more unfavorable outcomes (death or transplantation).



## Not just liver . . .

*British Journal of Cancer* (2015) **112**, 1247–1250.

doi:10.1038/bjc.2015.26 [www.bjcancer.com](http://www.bjcancer.com)

Published online 31 March 2015

<http://www.nature.com/bjc/journal/v112/n7/full/bjc201526a.html>

**Muscle-building supplement use and increased risk of testicular germ cell cancer in men from Connecticut and Massachusetts**  
N Li et al

Epidemiological study to examine the relationship between use of muscle-building supplements (MBSs) and testicular germ cell cancer (TGCC) risk

Population-based case–control study including 356 TGCC cases and 513 controls from Ct and Ma

The odds ratio (OR) for ever use of MBSs in relation to risk of TGCC was significantly elevated (OR=1.65, 95% confidence interval (CI): 1.11–2.46).

The associations were significantly stronger among early users, men with more types of MBSs used, and longer periods of use

## The scale of the problem

### Emergency Department Visits for Adverse Events Related to Dietary Supplements

Andrew I. Geller, M.D., Nadine Shehab, Pharm.D., M.P.H., Nina J. Weidle, Pharm.D., Maribeth C. Lovegrove, M.P.H., Beverly J. Wolpert, Ph.D., Babgaleh B. Timbo, M.D., Dr.P.H., Robert P. Mozersky, D.O., and Daniel S. Budnitz, M.D., M.P.H.

*N Engl J Med* 2015; 373:1531–1540 | October 15, 2015 | DOI: 10.1056/NEJMsa1504267

#### CONCLUSION:

An estimated 23,000 emergency department visits in the United States every year are attributed to adverse events related to dietary supplements. Such visits commonly involve cardiovascular manifestations from weight-loss or energy products among young adults

American Journal of Emergency Medicine 34 (2016) 226–229

Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: [www.elsevier.com/locate/ajem](http://www.elsevier.com/locate/ajem)

ELSEVIER

Case Report

*ajem* (Pancras) (2016) May 09; 37(3):226–227

Surv  
supl

CASE REPORT

**Acute Pancreatitis Secondary to Garcinia Cambogia; The Unknown Cost**

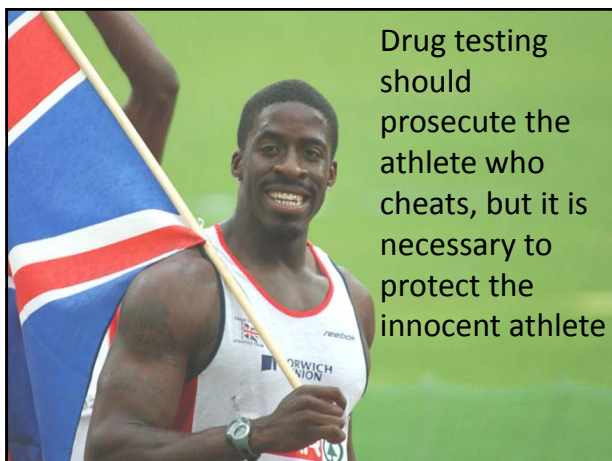
Short communication

Received: 21 April 2015      Revised: 1 July 2015      Accepted: 1 July 2015      Published online in Wiley Online Library: 22 September 2015

(www.drugtestinganalysis.com) DOI: 10.1002/dta.1849

**Pharmaceutical quantities of yohimbine found in dietary supplements in the USA**

Pieter A. Cohen,<sup>a,b,\*</sup> Yan-Hong Wang,<sup>c</sup> Gregory Maller,<sup>d</sup> Renan DeSouza<sup>d</sup> and Ikhlas A. Khan<sup>e</sup>



Drug testing should prosecute the athlete who cheats, but it is necessary to protect the innocent athlete

## Strict Liability

Strict liability gives no room for error

Some supplements are contaminated with prohibited substances

How can the athlete/coach/team doctor make an informed decision?



## Manufacturer's guarantees

**Prolab Creatine Monohydrate 300g + 300g and FREE T-Shirt**

Prolab Creatine Monohydrate is a product designed to allow for increased performance and muscle mass, as well as sustain enhanced athletic performance.

Creatine is a natural substance found in the body that plays a very powerful role in energy metabolism. Oral supplementation of creatine monohydrate has been shown to increase the rephosphorylation of ATP (adenosine triphosphate) from ADP (adenosine diphosphate) during muscle contractions. ATP is the molecule the muscle cells burn during muscle contraction. When the energy is released from the ATP molecule it drops off a phosphate, thus becoming ADP. Creatine combines with a phosphate molecule forming a phosphocreatine molecule which delivers the phosphate to the ADP molecule recharging ATP. This recharged ATP molecule is then ready to be utilized for energy again. Because the body only stores an 8-12 second supply of ATP, it is very important to increase the creatine pool and recharges the ATP-ADP phosphate shuttle. The result is more explosive muscular contractions, increased stamina and endurance, greater intensity and less muscular fatigue which delivers more muscle size and strength.

Prolab Nutrition's creatine monohydrate is produced in Germany in an ISO 9001 & ISO 14001 certified factory. An ISO Certification is the highest award a laboratory or factory can achieve. It surpasses the standards of GTC and even exceeds the strict standards of pharmaceutical manufacturing.

Creatine Monohydrate is produced via a chemical synthesis route. The synthesis is done by reacting sarcosine sodium salt with cyanamide under heated conditions. Sarcosine sodium salt is a derivative of acetic acid. Cyanamide

undergoes rigid testing for purity against a creatine monohydrate standard. testing procedure will typically score as 99% pure creatine monohydrate.

### Label Information

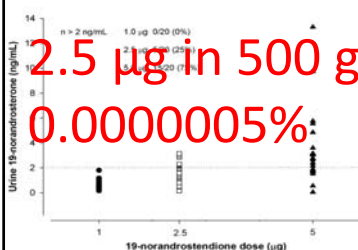
100% Pure pharmaceutical grade Creatine Monohydrate

### Dosage

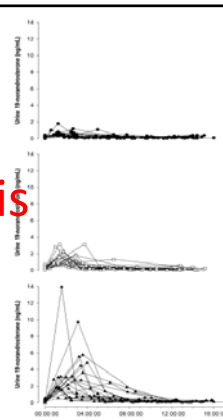
During the loading phase, take one rounded heaped spoon of Prolab Creatine Monohydrate (3 grams) 4 times per day (20 grams total); for maintenance period, take one rounded heaped spoon (3 grams) 2 times per day. Dissolve in juice, water, or another beverage.

500 mL of water containing 5 g of creatine and 1.0, 2.5, or 5.0 µg of 19-norandrostenedione

2.5 µg in 500 g is 0.0000005%



**FIGURE 3—Peak urinary 19-NA concentrations on each trial. These data have been corrected where necessary for specific gravity of the sample according to the procedures required by WADA. The dotted line marks the 2-ng/mL<sup>-1</sup> level that constitutes a doping violation under current WADA rules.**



**FIGURE 3—Urinary 19-NA excretion for all subjects on the 1.0 µg, 2.5 µg, and 5.0 µg dosages.**

## Urinary Nandrolone Metabolite Detection after Ingestion of a Nandrolone Precursor

PHILLIP WATSON<sup>1</sup>, CATHERINE JUDKINS<sup>2</sup>, ED HOUGHTON<sup>2</sup>, CAROLINE RUSSELL<sup>2</sup>, and RONALD J. MAUGHAN<sup>1</sup>

<sup>1</sup>School of Sport and Exercise Sciences, Loughborough University, Loughborough, UNITED KINGDOM;

and <sup>2</sup>Drug Surveillance Group, HFL Sport Science, Newmarket Road, Fordham, Cambridgeshire, UNITED KINGDOM

### ABSTRACT

WATSON, P., C. JUDKINS, E. HOUGHTON, C. RUSSELL, and R. J. MAUGHAN. Urinary Nandrolone Metabolite Detection after Ingestion of a Nandrolone Precursor. *Med. Sci. Sports Exerc.*, Vol. 41, No. 4, pp. 766-772, 2009. **Introduction:** Quantities of various anabolic/androgenic steroids have been found in dietary supplements without their presence being disclosed on the label. The aim of this study was to quantify the excretion patterns of the diagnostic metabolites, 19-norandrostenedione (19-NA), and 19-oxotestosterone (19-NE) after ingestion of small doses of 19-nor-4-androstene-3,17-dione (19-norandrostenedione). **Methods:** Eleven males and nine females entered the laboratory in the morning after an overnight fast. An initial urine sample was collected, and volunteers then ingested 500 mL of water containing 5 g of creatine monohydrate and 1.0, 2.5, or 5.0 µg of 19-norandrostenedione. The volume of each urine void was measured, and an aliquot was taken. Samples were analyzed for the metabolites 19-NA and 19-NE by GC/MS. **Results:** Baseline urinary 19-NA concentrations were 0.19 ± 0.14 ng/mL<sup>-1</sup>. Ingestion of the supplement resulted in peak mean urinary 19-NA concentrations of 0.68 ± 0.36, 1.56 ± 0.86, and 3.89 ± 3.11 ng/mL<sup>-1</sup> in the 1.0-, 2.5-, or 5.0-µg trials, respectively. Under current WADA regulations, ingestion of the 1.0-µg dose produced 0 positive doping tests, 5 subjects (20%) tested positive in the 2.5-µg trial, and 15 subjects (75%) had urinary 19-NA concentrations exceeding 2 ng/mL<sup>-1</sup> after ingesting creatine containing 5.0 µg of the steroid. The recovery of the ingested dose was highly variable between individuals, with values ranging from 11% to 84% (mean ± SD = 47% ± 18%). **Conclusions:** Ingestion of trace amounts of 19-norandrostenedione can result in transient elevations of urinary 19-NA and 19-NE concentrations. The addition of as little as 2.5 µg of 19-norandrostenedione to a supplement (0.00005% contamination) appears sufficient to result in a doping violation in some individuals. **Key Words:** 19-NORANDROSTENEDIONE, STEROIDS, DRUGS IN SPORT, WORLD ANTI DOPING AGENCY.

## Dauids faces two-year ban for drug use

By Richard Bright

Published: 7:11PM BST 16 May 2001

EDGAR DAVIDS, the Juventus and Holland midfielder, could be banned from football for up to two years after failing a second drugs test.

Results from his B sample confirmed that 28-year-old Davids had tested positive for banned anabolic steroids, the Italian Olympic Committee (COI) announced yesterday.

### Related Articles

Laio defender faces jail over drug-taking

Dauids just says 'no'

Da Boer denies steroid use

Lyon academy delivers Ligue 1 champions

Jamaican sprinters fail drug tests according to IAAF

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COI said in a statement that a second urine sample given by Davids after a Serie A match between Juventus and Udinese on March 4 confirmed the result of an earlier test.

A CONI spokesman said: "The findings have been passed to our anti-doping commission, who will now launch an inquiry. It will then be up to the football federation and the football league (in Italy) to impose the relevant punishment."

COI's statement said Davids had tested positive for norandrostene and norotestosterone. Both are banned anabolic steroids.

After COI announced in April that Davids had failed a preliminary doping test, the midfielder denied having used any illegal substance.

Davids has enlisted the help of New York-based lawyer Robert Geerlings.

Assisting Geerlings is Belgian lawyer Luc Mison, who helped Jean-Marc Bosman in the famous Bosman trial, and doping expert Emile Vrijman.

"I understood that the first test had a result of 2.6 nanograms per millilitre and the second test showed a 2.7," said Geerlings. The limit of nandrolone allowed in the body is 2.0 nanograms.

Davids was the first of two Holland internationals to have failed a drugs test.

Barcelona defender Frank de Boer last week protested his innocence after submitting a positive sample which also showed traces of nandrolone.

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## Kristina Smigun's Samples from 2006 Turin Olympics Retested w/Positive Result For Steroids

by John Symon

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February 21, 2014 - Samples from the 2006 Turin Olympics belonging to Estonian cross-country skier Kristina Smigun-Vahi have been found positive for anabolic steroids, according to German radio station Deutschland Funk as the original source. The International Olympic Committee (IOC) has not yet officially commented on this case.

New developments in doping testing now make it possible to detect degradation products of anabolic steroids. The IOC recently ordered the re-testing of some 350 samples from the 2006 Turin Olympic Games. Apparently, Smigun's four Torino samples indicate the use of anabolic steroids.

The Estonian Olympic Committee admitted last week that Smigun was under suspicion for doping reported the Associated Press. The article also noted the absence of positive doping tests at the 2014 Sochi Games, giving credit to rigorous doping control tests - but only days later the first doping offense in Sochi was announced. Most of the tests are conducted in strength and endurance sports, notably cross-country skiing and biathlon, where the use of EPO and other blood-boosting drugs can aid stamina.



Kristina Smigun-Vahi at the Vancouver 2010 Winter Olympics. © Heinz Ruckemann

## Kristina Smigun's Samples from 2006 Turin Olympics Retested w/Positive Result For Steroids

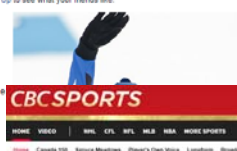
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## Canadians outraged Estonian skier cleared of doping

CBC News - Posted March 20, 2014 10:41 PM ET | Last Updated March 20, 2014 10:41 PM ET

Canadians cross-country ski team coach Dave Wood was shocked to learn Estonian skier Kristina Smigun would be allowed to compete at the Sochi Games.

In December, Smigun tested positive for the banned substance 19-norandrostenedione and faced a two-year ban that would have kept her out of the Olympics.

On Thursday, however, the Estonian Ski Association reported that Smigun's B sample, taken the same day, showed the steroid level registered lower than the level for a doping infraction.

Wood told The Globe and Mail it was "outraged or incognizant to have tests with measurement" that vary so dramatically, he said it was "unacceptable."

Top Canadian skier Benoit Stoll called for the independent World Anti-Doping Agency to investigate.

Smigun is the country's best hope for a medal at the Games.

"I want to thank God," said Wood, "to thank everyone who doesn't abandon the ski. These athletes, who believe in the sport, are an emotional Smigun. I don't



## The Least Thing

A blog about the study of sport in society

About Me Sunday, January 8, 2017 About This Blog

**A List of Elite Athletes Falsely Accused of Doping**

Below I list the athletes, the sport and the drug that the evidence suggests that the athlete was falsely accused of taking. Click on the athlete name for supporting information. I welcome any comments or suggestions to the list.

- **Mamadou Sakho** (France, football, Higenamine)
- **Kunal Perera** (India, cricket, 19-Norandrosteredione)
- **Paola Piliago** (Mexico, fencing, modafinil)
- **Andrus Veerpalu** (Estonia, Nordic skiing, recombinant human growth hormone)
- **Erik Tyssse** (Norway, race walking, rEPO)
- **Steven Colvert** (Ireland, athletics, rEPO)
- **Hossam Ghaly** (Egypt, football, nandrolone)
- **Samir Ibrahim Ali Hassan** (UAE, football, nandrolone)
- **Hassan Tir** (UAE, football, nandrolone)
- **Al Kowashki** (Saudi Arabia, football, nandrolone)
- **Pedro Salberg** (Brazil, beach volleyball, testosterone)
- **Diana Taurasi** (US, basketball, modafinil)
- **Monique Colker** (US, basketball, modafinil)
- **Deco** (Portugal, football, hydrochlorothiazide and tamoxifen)

**Blog Roll**

**EPL Talk**  
FIFA open Gates Three back in China after

There are 100 articles in this blog.

## Risk management

Athletes, and those who care for them, should take precautions:

Use supplements only when a benefit is likely

Use supplements and doses that are "safe"

Use products that are "low risk"

**BUT, how do you assess risk?**

## WADA-Accredited Laboratories Do Not Test Dietary Supplements

The Laboratory Code of Ethics, in the International Standard for Laboratories (Section 4.4 of Annex B), states that WADA-accredited laboratories shall not engage in analyzing commercial material or preparations (e.g. dietary supplements) unless specifically requested by an Anti-Doping Organization as part of a doping case investigation.

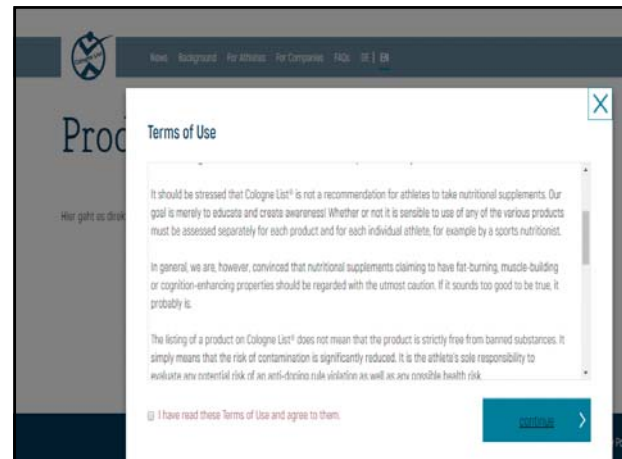
The image shows three website screenshots: NSF (National Sanitation Foundation), ConsumerLab.com, and Eurofins. A large banner for BSCG (Bio-Security Certification Group) is overlaid on the bottom right, stating 'BSCG CERTIFICATION' and 'WHAT IS A PERSONAL FOR YOU?'. The banner also mentions 'CERTIFIED FOODS', 'CERTIFIED SUPPLEMENTS', and 'CERTIFIED DRUGS'.

The image shows the 'Background' section of the 'Prevention of doping in (elite) sport' website. It features a photo of a male athlete in a blue shirt and white shorts, performing a stretching exercise on a track. The text 'Background' is overlaid on the image. Below the image, there is a search bar with the text 'find a product or company...' and a 'show all products' link. At the bottom, there is a navigation bar with links for 'f', 'Imprint', 'Privacy Policy', and 'Contact'.

Approximately 950 products are currently published on the Cologne List® along with the corresponding laboratory analysis results

Product Database			
Company	Product	Product category	Availability of tested products
AlzChem AG	Creapure®	Creatine	
Atlantic Multipower Germany GmbH & Co. OHG	Creatine Powder	Creatine	
BioTech USA KfL	100% Micronized Creatine Monohydrate	Creatine	
Body Attack Sports Nutrition GmbH & Co. KG	Nitro Pump 2.0 - Cranberry Flavour	Creatine	
Body Attack Sports Nutrition GmbH & Co. KG	100% Pure Creatine	Creatine	
Body Attack Sports Nutrition GmbH & Co. KG	Nitro Pump 2.0 - Fruit Punch Flavour	Creatine	
Body Attack Sports Nutrition GmbH & Co. KG	CREAZ	Creatine	
Eurofins GmbH	Creatine 100% Pure	Creatine	

Creapure®			
Laboratory analysis conducted by the Center for Preventive Doping Research (CePreDo) at the German Sport University Cologne			
Batch-Number	Best before date	Analysis date	Laboratory analysis
709141	2020-04-01	2017-06-19	without objection
612841	2019-05-07	2016-06-30	without objection
513531	2018-05-15	2015-07-09	without objection
023637	2013-08-24	2010-11-22	without objection
707931	2010-02-01	2007-06-21	without objection



## Does this guarantee purity?

Use of supplements that have been batch tested reduces the risk

It does not guarantee freedom from substances that cause harm or adverse finding

There is a finite limit to sensitivity of tests

Not all prohibited substances are tested for

Human error and criminal activity are possible

The active ingredient is not tested for



## Summary and Conclusions

Supplementation with essential nutrients may help some athletes

A few supplements may enhance performance

Some dietary supplements contain ingredients that may be harmful or cause a failed drugs test

Harmful ingredients are often not listed on the label

Athletes can manage the risk by limiting use and by using products from "safe" sources

Contamination presents a challenge for the athlete and for those responsible for doping control (and public health)

“The use of supplements does not compensate for poor food choices and an inadequate diet.

Athletes contemplating the use of supplements and sports foods should consider their efficacy, their cost, the risk to health and performance, and the potential for a positive doping test.”

IOC Consensus Statement on Sports Nutrition

