

SUPPLEMENT SAFETY

Understanding the risk
of banned substances
and the importance of
third-party testing.



SPORT

OVERVIEW



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WE REGULARLY READ NEWS STORIES OF AN ATHLETE GETTING **SUSPENDED** DUE TO TESTING POSITIVE FOR A BANNED SUBSTANCE.

This results in their playing time, income and professional dreams being tarnished. As we all know, once someone's reputation is questioned, it's difficult to rebuild trust. Many times, the athlete(s) in question were supplied supplements that either contained a banned substance or were inadvertently contaminated.

In order to protect the reputation of yourself, and those athletes you support, it's important to stay informed. Developed in 2008, Informed Sport is the only global banned substance testing and certification program that tests every single batch of a sports nutrition product prior to it being released to market. Any product that displays the Informed Sport logo or on-pack descriptor allows you to know the product has undergone rigorous testing for substances banned in sport.



WHY SUPPLEMENT TESTING IS IMPORTANT

Based on our surveys and testing, **10-15% of supplements on the market** may suffer from low levels of contamination. Even if the contamination levels are low, an athlete may still test positive. Furthermore, athletes tend to take numerous supplements, multiple times per day, to help with recovery and performance which ultimately can increase these levels. If any of these supplements contain even low levels of a banned substance, the accumulative levels could trigger an adverse finding in their drug test.

Generally, supplements can be inadvertently contaminated the following ways:



1. Cross-contamination within the manufacturing process:

Manufacturing facilities and all equipment used to produce supplements must be thoroughly cleaned between batches. To safeguard against cross-contamination, Informed Sport performs a manufacturing audit prior to product certification. The consistency of numerous banned substances can be very sticky and are difficult to isolate. This makes ridding equipment of them a challenge. When analyzing a manufacturing facility, other critical control points must be looked at. Contamination can occur due to improper storage, ingredient handling, and dust management as ingredients can go airborne.

Our audit looks for all the critical control points where cross-contamination could occur. This knowledge is based on over 12 years of audits in over 550 manufacturing facilities worldwide. The audit includes reviewing standard operating procedures (SOPs) for all production, packing and storage areas to make certain cleaning processes are in place to eliminate the possibility of contamination. During an audit, Informed Sport identifies any high-risk materials and develops a corrective plan to ensure these materials are removed and do not come in any contact with Informed Sport certified products and the equipment they're produced on.



2. Impurities within ingredients:

Many times, the source of contamination comes from a plant source(s). Some plant materials can include naturally occurring steroidal or stimulant compounds. Often times, these ingredients can be overlooked in regards to testing for banned substances or are not known to contain a banned compound. Because of this, plant-based supplements can carry varying amounts of a banned compound, thus, resulting in a failed drug test. The Informed Sport program recognizes this risk. Our world-class ISO 17025 accredited anti-doping laboratories are able to detect these naturally occurring compounds and determine if they are at levels to pose a risk to athletes.



3. Cross-contamination between ingredients within the supply chain:

Ingredients used in supplement production may be produced in countries with poor quality control standards. We have seen this be an issue with inadvertent contamination in finished products many times. In the United States, the Food and Drug Administration (FDA) does not require testing for inadvertent contamination of banned substances in ingredients. Informed Sport performs a Raw Material Supplier Assessment to confirm the manufacturer has a vendor qualification program in place. The vendor qualification program must include a process to identify whether the supplier produces or handles banned substances.

PROHIBITED SUBSTANCES

The World Anti-Doping Agency (WADA) manages a list of substances that are banned in most sports across the world. Titled the [List of Prohibited Substances and Methods](#), WADA updates the list every year. It contains specific substances, grouped under classes of drugs, and defines which compounds are prohibited at all times and which are prohibited only in competition. Other than the WADA list, professional and collegiate sports in the U.S. have their own anti-doping policies and banned substances lists.

To stay updated on current and emerging threats, check out [INFORMED-SPORT.COM](https://www.informed-sport.com)

SUBSTANCES PROHIBITED AT ALL TIMES

Anabolic Agents

Anabolic agents are typically used to treat hormonal issues, such as delayed puberty, types of impotence and diseases resulting in muscle loss. Examples include: testosterone, nandrolone, DHEA, clenbuterol and selective androgen receptor modulators (SARMs).¹

POSSIBLE SIDE EFFECTS	
Physiological <ul style="list-style-type: none"> Acne Male patterned baldness Liver damage Stunted growth 	Psychological <ul style="list-style-type: none"> Increased aggressiveness, sometimes referred to as "roid rage" Impaired judgement Delusions Withdrawal has been associated with depression and suicide
Males <ul style="list-style-type: none"> Shrinking of testicles Decreased sperm production Development of breast tissue Hair loss 	Females <ul style="list-style-type: none"> Facial hair growth and/or excess body hair Decrease of breast size Abnormal menstrual cycles Deepening of voice Enlarged clitoris

Peptide Hormones, Growth Factors, Related Substances and Mimetics

General use varies, but usually used as a treatment of cancer, an aid for premature births, chronic kidney disease, acute anemia and short stature. Examples include: human growth hormone (hGH), erythropoietin (EPO), insulin, human chorionic gonadotrophin (HCG), and adrenocorticotrophin (ACTH).²

POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none"> Hypertension (ESAs/hGH) Blood cancers/leukemia (ESAs/hGH) Anemia (ESAs) Stroke (ESAs) 	<ul style="list-style-type: none"> Heart attack Pulmonary embolism (ESAs) Feminization (hCG) Thyroid problems (hGH)

BETA-2 Agonists

These are primarily used to treat respiratory diseases such as asthma and chronic obstructive pulmonary disease.³ We should note that there are some inhaled beta-2 agonists, such as salbutamol and salmeterol, which are permitted up to certain dose limits.⁴

POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none"> Rapid heart rate Headaches Sweating 	<ul style="list-style-type: none"> Nausea Muscle cramps Nervousness

Hormone and Metabolic Modulators

Hormone and metabolic modulators can be used to modify hormone functions. Examples include: aromatase inhibitors, selective estrogen receptor modulators (SERMs), clomiphene, and myostatin.⁵

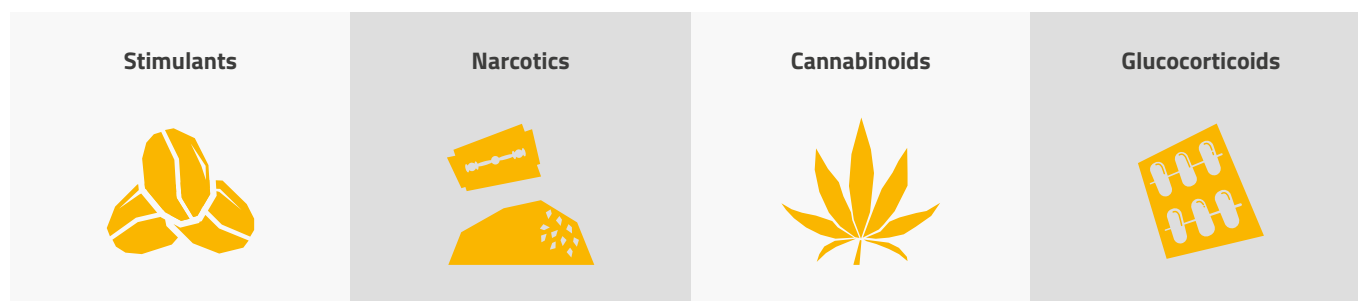
POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none"> Dramatic change in blood sugar levels (insulin) Endocrine system disruption (clomiphene) Liver damage (AICAR) 	<ul style="list-style-type: none"> Cholesterol imbalance (aromatase inhibitors) Motor function disorders and tremors (trimetazidine)

Diuretics and Masking Agents

These compounds are used to treat medical conditions such as hypertension, kidney disease and congestive heart failure. If these are taken without medical supervision, it can result in potassium depletion and possibly death.⁶

POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none"> Dehydration Muscle cramps Dizziness or fainting 	<ul style="list-style-type: none"> A drop in blood pressure Loss of coordination and balance

SUBSTANCES PROHIBITED IN-COMPETITION



Stimulants

A stimulant is a general term used to describe a substance that can temporarily quicken a functional activity, or the activity of an organ, in the body. Stimulants are relatively common compounds ranging from caffeine to over the counter medicines and even recreational drugs such as amphetamine, cocaine, etc.

Stimulants can be used to suppress appetite and are commonly found in weight loss and pre-workout formulas. Many times, in the quest to have the “strongest” formula, supplements can contain ingredients that may mimic or appear as “amphetamine-like”, which could lead to a failed drug test.

POSSIBLE SIDE EFFECTS	
Physiological⁷ <ul style="list-style-type: none">▪ Insomnia▪ Extreme weight loss▪ Addiction▪ Dehydration▪ Tremors▪ Increased heart rate▪ Increased blood pressure▪ Higher risk of stroke, heart attack and seizures	Psychological⁸ <ul style="list-style-type: none">▪ Hallucinations▪ Delusions▪ Persistent anxiety▪ Paranoia▪ Depression

Narcotics

Generally, only used for severe pain. Narcotics should only be taken if prescribed and closely monitored by a healthcare professional.⁹

POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none">▪ Nausea and vomiting▪ Higher pain threshold▪ Decreased heart rate	<ul style="list-style-type: none">▪ Dependence and possibly addiction▪ Respiratory depression▪ Death

Cannabinoids

Even though cannabidiol (CBD oil) is no longer prohibited, cannabidiol extracted from cannabis plants may contain varying concentrations of THC, which still remains a prohibited substance for many sports.

POSSIBLE SIDE EFFECTS	
<ul style="list-style-type: none">▪ Increased heart rate▪ Impaired short-term memory▪ Distorted sense of time▪ Diminished concentration▪ Insatiability of mood	<ul style="list-style-type: none">▪ Impairment of coordination and reflexes▪ Reduced thinking and reading comprehension▪ Respiratory diseases

Glucocorticoids

Glucocorticoids are widely used to treat allergies, asthma, other inflammatory conditions and skin disorders¹¹.

POSSIBLE SIDE EFFECTS
<ul style="list-style-type: none">▪ Loss of muscle mass and bone density▪ Decrease or stopping growth▪ Suppression of immune system

Stay informed on products that have been tested for prohibited substances at [INFORMED-SPORT.COM](https://www.informed-sport.com)

PROHIBITED SUBSTANCES CAN STILL BE SOLD

Even though many of the substances on a prohibited substance list are illegal (e.g., cocaine, ecstasy), there are still countless others available by prescription and over the counter sales. **Just because a substance is banned by sport that does not mean it's banned for sale.** Legal supplements may be prohibited by sport if the governing body considers the substance provides an unfair advantage in training or competition. In short, just because a supplement is purchased from a reputable retailer does not mean it is safe for use. Because of the availability of banned substances, a supplement can contain a banned substance as an ingredient or it could have been inadvertently contaminated.

INFORMED SPORT TESTING IS ACCREDITED TO ISO 17025 STANDARDS.

The sporting industry recommends to only use products that have been tested for banned substances using ISO 17025 accredited methods.

SPIKED PRODUCTS

There are instances when prohibited substances are added to a product even though they're not listed on the label. This is called spiking. The vast majority of reputable nutritional supplement companies do not engage in this practice, although it does happen. Informed Sport tests over 22,000 samples a year and has found that contamination typically occurs inadvertently and that the levels of substances found are very low (i.e. not indicative of deliberate addition).

Supplement companies may include plant ingredients in product formulas, which could include natural occurring steroidal or stimulant compounds. Since most ingredients are never tested individually for banned substances at these low levels, there is often a false sense of compliance when including these ingredients in the product.

It's important to remember, just because a banned substance isn't listed on a product label doesn't mean it's safe to use. Prohibited substances can appear on the product label under a different name to what's on the prohibited substances lists. Products could also be inadvertently cross-contaminated during the manufacturing or supply chain process, which is why finished product testing is critical to maintain a level of safety for athletes.



GMP CERTIFIED

There is the common misconception that if a company is GMP certified, then the risk of a product containing a banned substance is eliminated. Although GMP certification is important, it only certifies that the manufacturer has the necessary manufacturing documentation and processes in place to ensure product quality, traceability and competence. GMP does not cover the presence or absence of substances such as steroids and banned stimulants.

GMP certification also does not require the product to be tested for banned substances at an ISO 17025 accredited laboratory as required by Informed Sport. Because of this, inadvertent contamination from banned substances is still possible in GMP certified manufacturing facilities.

SUPPLEMENT FACTS PANEL

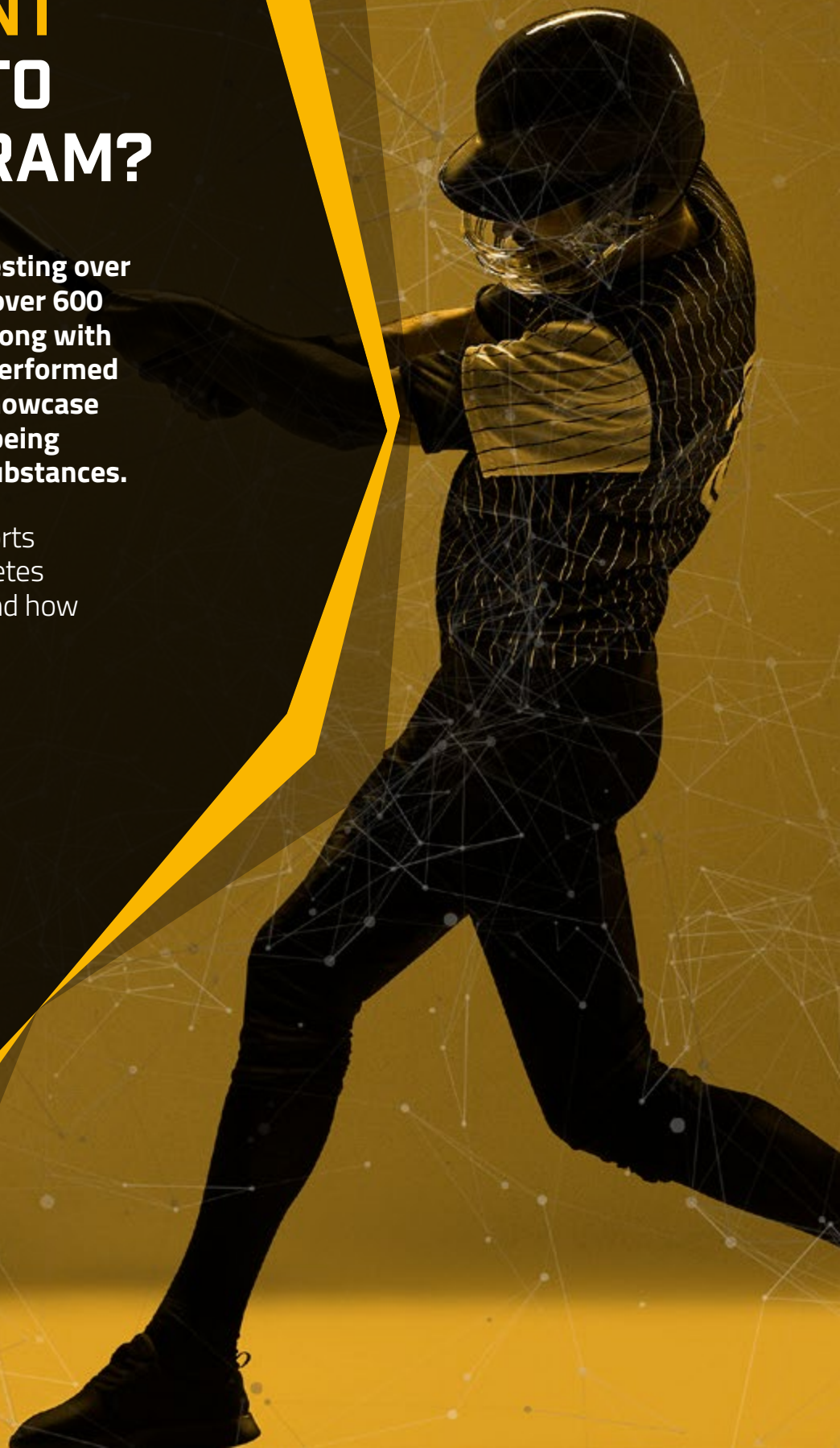
As required by the FDA, supplements must include information on what's in the product by way of a "supplement facts panel". This includes the serving size, servings per container, macro/micro nutrient amounts and % of daily value, ingredient listed by weight and necessary allergen statements.

Supplement manufacturers must list all ingredients, including those used in their proprietary blends. These proprietary blends are often given marketing names that do not reflect the actual ingredients. It's vital to research each ingredient to ensure they are not on a prohibited substance list. This is where Informed Sport comes in. By using Informed Sport certified products, you can have peace of mind that your supplements are safer to use.

WHAT CAN THE THE THREAT OF **INADVERTENT DOPING** BE TO YOUR PROGRAM?

Informed Sport is currently testing over 22,000 samples per year for over 600 companies in 40 countries. Along with testing, Informed Sport has performed regular market research to showcase the severity of supplements being contaminated with banned substances.

By understanding the risks, sports organizations can educate athletes on safer supplements to use and how to find them.



THE THREAT TO ATHLETES

The majority of athletes utilize supplements to help with training, recovery and performance. All athletes need to make sure the products they are recommended and provided are safe to use. Doping scandals, whether intake was intentional or not, have ruined careers, lives and reputations. The following are prime examples, and quotes, of how various professional athletes have been affected by contaminated supplements.

(Athlete names have been removed for privacy)



PROFESSIONAL TENNIS PLAYER

"What has happened to me is a nightmare, your life is not any more in your hands and you are there in the position where your career can completely turn around. My life, my career is at stake - I knew I had not tried to cheat."



PROFESSIONAL BOXER

The boxer was a medal favorite in his division, having won European Olympic gold. He now faces a potential ban of up to four years, even if he proves the supplement he consumed was unintentionally contaminated.



TRACK AND FIELD STAR

"I am utterly devastated about the news of this anti-doping rule violation, which has come as a great shock to me. From the outset, I would strongly like to state that I have not knowingly taken any banned substance."



MARATHON RUNNER

A marathon runner collapsed after competition. The runner had taken a supplement containing DMAA. This, in combination with extreme physical exertion, caused acute cardiac failure, which resulted in death.



PROFESSIONAL AMERICAN FOOTBALL PLAYER

"I took a recommended supplement to combat inflammation. Unfortunately this supplement contained an ingredient that was on the NFL's banned substance list."



This player is estimated to have lost \$3.435 million during the suspension.

A man in a black t-shirt and dark pants is climbing a thick rope. He is looking up and pulling the rope with both hands. The background is a solid yellow color with a faint, white, geometric network pattern of lines and dots. A large, dark grey, angular shape cuts across the lower left portion of the image, serving as a background for the text.

OUR FINDINGS

2007

HFL SURVEY ANALYSIS OF 58 SUPPLEMENTS

Products purchased via stores/internet in the USA

25% CONTAINED PROHIBITED
STERIODS

11% CONTAINED PROHIBITED
STIMULANTS

**NONE OF THE PRODUCTS WERE ON ANY
3RD-PARTY TESTING PROGRAM.**

2008

HFL SURVEY ANALYSIS OF 152 SUPPLEMENTS

Products purchased via stores/internet in the UK

10.5% CONTAINED PROHIBITED
STERIODS AND/
OR STIMULANTS

**NONE OF THE PRODUCTS WERE ON
ANY 3RD-PARTY TESTING PROGRAM.**

2013

LGC EUROPEAN PRODUCT ANALYSIS OF TOP 24 BRANDS FROM 12 DIFFERENT COMPANIES

114 products were purchased and tested

**10% CONTAINED STEROIDS
AND/OR STIMULANTS.**

**1/10 CHANCE OF
CONTAMINATION**

Some products even claimed to be tested for banned substances or stated they were "doping-free".

NO PRODUCTS WERE ON THE INFORMED CHOICE OR INFORMED SPORT PROGRAM.

2016

LGC AUSTRALIAN SURVEY ANALYSIS OF 67 PRODUCTS, TARGETED BECAUSE THEY HAD NOT BEEN TESTED FOR SUBSTANCES BANNED IN SPORT

Products selected from a wide range of functional groups and matrices including bars, capsules, gels, liquids, powders and tablets

**15 FINDINGS FOR
STIMULANTS**

**19% SHOWED EVIDENCE OF CONTAINING
ONE OR MORE SUBSTANCES CONSIDERED
PROHIBITED IN SPORT**

The presence of unlabeled stimulants at the elevated levels found not only posed a significant risk of an athlete failing a drug test, but also had the potential to cause or contribute to serious health problems to an athlete.

**WEIGHT MANAGEMENT PRODUCTS YIELDED THE MOST
FINDINGS, WITH PRE-WORKOUT SUPPLEMENTS
CONTAINING THE SECOND MOST BANNED
SUBSTANCES.**

**5 FINDINGS FOR
STERIODS**

The most common observation was the presence of the banned stimulant 1,3-dimethylbutylamine (undeclared on labels), indicating it's use was an ongoing issue

YOU CAN DOWNLOAD THE FULL SURVEY SUMMARY AT SUPPLEMENTSINSport.COM

YOUR ROLE

While it is ultimately the responsibility of athletes to know what they're putting in their bodies, as advisors, you can help educate them to make sure they are knowledgeable about the proper supplements to take and the risks of banned substances. We recommend using the following questions to help facilitate this education:

1. What are the challenges I face when trying to prevent athletes from testing positive for a banned substance?

- Some may not be well versed on the supplement manufacturing process and how supplements become adulterated.
- They may not be up to date on new ingredients entering the market, especially ingredients that could cause a positive doping test.
- Athletes listening to non-credible sources for their supplement use (i.e. teammates, online forums, shop employees).
- There isn't enough time to properly educate athletes on the risks associated with supplements.

To combat this, be sure to stay updated on banned substances and emerging threats on Informed-Sport.com. Also, be certain products you are recommending have been certified Informed Sport by searching on our website.

2. Where are athletes getting their information from on supplements?

- Coaches, dietitian, personal trainers, etc.
- Teammates and peers
- Supplement store staff
- Internet forums / social media

Stress the importance of taking responsibility for what they put in their bodies. Even if the advice is coming from a trusted professional, the athlete needs to confirm any recommended products have been tested for banned substances.

Quickly search by batch/lot number on Informed-Sport.com.

3. What are the top 3 things commonly seen in supplement use with athletes?

- Athletes rely heavily on supplements to help with training, recovery and performance.
- Many athletes may not be educated on third-party certification and testing programs, like Informed Sport.
- Many athletes simply don't know the science behind supplement ingredients.

4. How to address supplement safety with athletes:

- Address the severity and commonality of banned substance contamination in supplements.
- Stress the importance of third-party testing and certification programs.
- Emphasize how celebrity power and good marketing are influencing athletes to purchase new supplements, which creates more risks.
- Reiterate why athletes should only take supplement advice from staff or reputable third-party programs, like Informed Sport.

5. What type of education can I provide to athletes?

- Detail the various ways supplements can be contaminated.
 - During the manufacturing process
 - Impurities within ingredients
 - Cross-contamination in the supply chain
- Share the effects banned substances can have on their health.
- Explain the severe repercussions of testing positive for a banned substance.

Informed Sport provides educational materials on our website. Visit www.informed-sport.com/educational-resources for more information.

Brainstorm more ideas by using the notes section below:

NOTES

Please use this space to make notes

INFORMED SPORT CERTIFICATION PROCESS

All sports professionals and athletes can be confident when seeing the Informed Sport logo or on-pack descriptor on a product label. Products certified by Informed Sport undergo a rigorous pre-certification and post-certification process. Our certification process consists of 4 stages:



STAGE ONE: PRODUCT AND MANUFACTURING REVIEW

Prior to certification, a certification agreement will be issued along with a program pack, which explains how the program works and provides guidelines on how the Informed Sport logo may be used once certification is complete.

A comprehensive picture of the product is built up and reviewed to understand factors such as product branding & integrity, product variants, retail plans, product testing schedules and manufacturing facilities. At this stage, the product ingredients are reviewed in detail by experienced assessors to minimize the risk of banned substances.

A review of the procedures in place at relevant manufacturing facilities is then undertaken via a paper-based assessment. This process is managed by experienced assessors, who provide guidance on how to meet the required standards of the Informed Sport program and reduce risk within manufacturing processes.

This stage of the certification includes assessment of the following:

- Product/ingredient evaluation
- Quality systems and audits
- Staff training in relation to cross-contamination prevention
- Raw materials
- Raw material supplier assessment procedures
- Traceability & recall procedures



STAGE TWO: PRE-CERTIFICATION SAMPLE TESTING

A minimum of 3 finished product samples are tested using LGC's ISO 17025 accredited prohibited substances supplement screen.

An additional unit of each batch tested is sent in for secure storage at the LGC laboratory.

Testing is performed on commercial product ready for retail to consumers. These samples must not show indication of contamination with prohibited substances.



STAGE THREE: PRODUCT CERTIFICATION, LOGO USE AND WEB LISTING

Once stages 1 and 2 are complete and any resulting actions have been resolved, the product will be accepted for certification with Informed Sport. An Informed Sport certificate will be issued, after which time the supplement brand may use the Informed Sport logo in association with the certified product. The certified product will be listed on the Informed Sport website along with all tested batches. On the website, there is a link to purchase the certified product.



STAGE FOUR: POST-CERTIFICATION REQUIREMENTS AND TESTING

Following certification, EVERY product batch (including all flavor variants) must be submitted by the brand to Informed Sport for testing. An additional unit of each batch will be retained in secure storage for the shelf life of that particular product.

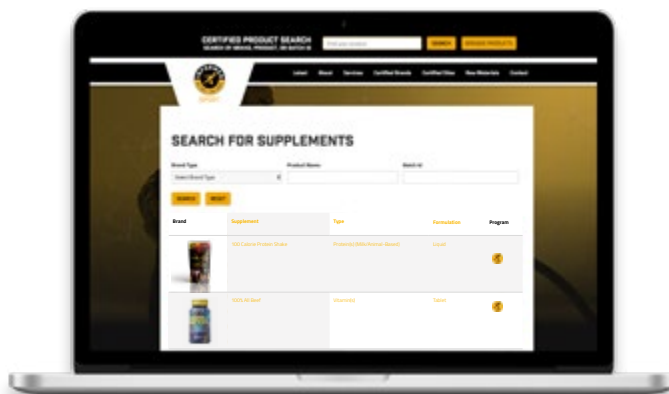
In addition, regular blind testing is performed to further ensure the integrity of the product, whereby the Informed Sport Program Management team purchase the product from retail for testing.

Every batch tested will be displayed on the Informed Sport website. In addition to regular product testing, the product and manufacturing facilities are reviewed regularly to ensure the requirements of Informed Sport continue to be met.

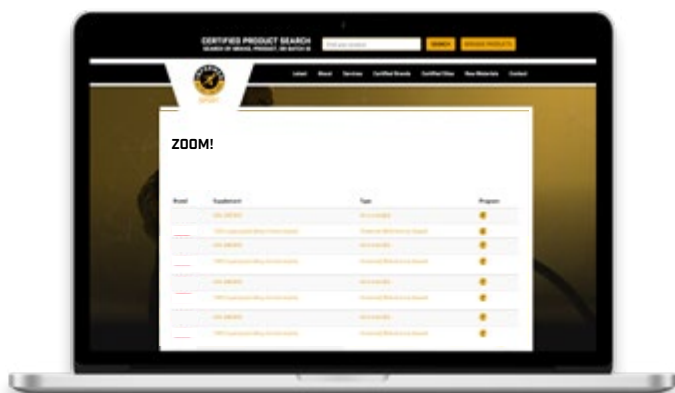
FINDING AN INFORMED SPORT CERTIFIED PRODUCT



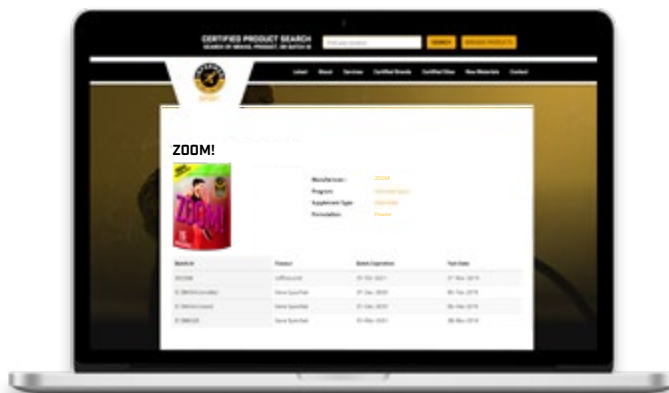
- 1 First, search by the exact product name, lot number or brand.



- 2 You can also browse all certified products on our certified products page.



- 3 Next, your search results will populate. Select the product you were searching for.



- 4 On the product page, you can see the batch number to ensure the exact batch you have has been tested and certified.

SAFETY PACK WHY RISK IT?

When shopping for supplements in store or online, look for the Informed Sport quality mark.

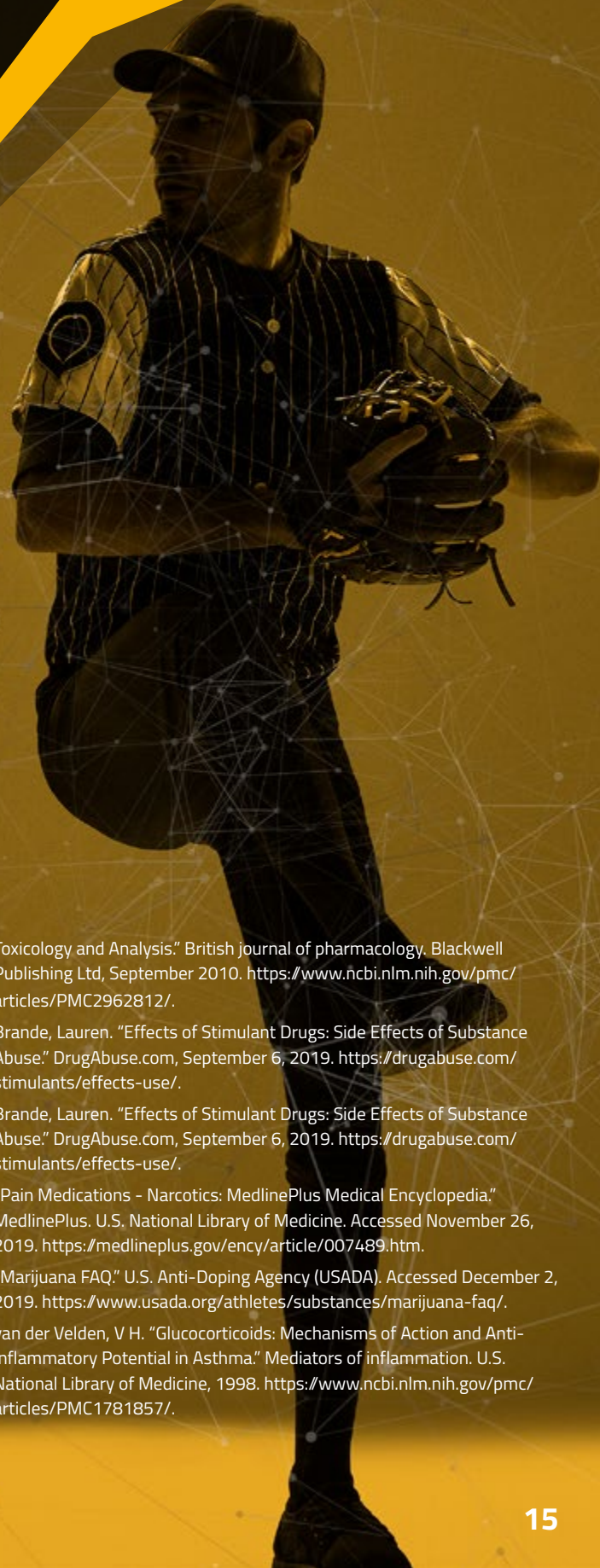
Be sure to verify the product has actually been tested and certified by checking that the batch number on the product is also listed as a tested batch on

INFORMED-SPORT.COM

WE TEST. YOU TRUST.

Informed Sport is the only global third-party testing and certification program that tests every single batch of a product prior to it being released to the market. LGC, the parent company of Informed Sport, has over 50 years of banned substance testing experience. It is essential for any athlete tested to anti-doping standards to ensure their products are safe to use. By only using Informed Sport certified products, you can have peace of mind that your supplements have been robustly tested to the highest of standards.

Just look for the Informed Sport logo or on-pack descriptor and confirm the batch has been tested by searching on **INFORMED-SPORT.COM**.



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INFORMED SPORT. WHY RISK IT?



📷 WETESTYOUSTRUST
📺 INFORMED SPORT & INFORMED CHOICE
📱 INFORMED SPORT & INFORMED CHOICE
🐦 WETESTYOUSTRUST
🌐 LINKEDIN.COM/COMPANY/WETESTYOUSTRUST



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