

# Growing Pains

Touted as a cutting-edge training aid and the fastest route to increased mass, **a new breed of pills called Sarms is outmuscling steroids.** The problem? They're unlicensed and unregulated, and unscrupulous dealers are putting users at serious risk. MH investigates

Words by Mark Wilding – Photography by Rowan Fee



**MUSCLE MASS DESTRUCTION:**  
SARMS PROMISE MUCH BUT THE  
SIDE EFFECTS CAN SHATTER LIVES

**1m**

THE NUMBER OF PEOPLE  
IN THE UK ESTIMATED TO  
BE TAKING IMAGE- AND  
PERFORMANCE-ENHANCING  
DRUGS (IPEDS)\*

\*PUBLIC HEALTH INSTITUTE



**P**rofessor James T Dalton never intended to create a performance-enhancing drug. In the 1990s,

Dalton was working at the University of Tennessee when his team made an unexpected discovery. While attempting to develop treatments for prostate cancer, Dalton identified an intriguing molecule. Andarine, as it came to be known, was of little use in fighting prostate cancer, but it had a remarkable effect on muscle growth. "It was the opposite of what we were looking for at the time," says Dalton. "But we turned almost all of our attention to this. We knew we really had something unique."

Drugs that help build muscle were nothing new. Anabolic steroids had long been used by bodybuilders to enhance their gains in the gym. But steroids were a blunt tool with myriad unwanted consequences, such as acne, hair loss and liver damage. Andarine seemed different. It targeted the androgen receptor, the cell component also targeted by testosterone and other steroids, but appeared to promote muscle growth with fewer side effects.

For Dalton, it was a remarkable find. Not only could this drug treat the muscle wasting associated with a wide range of illnesses and conditions, but it also showed promise in the treatment of breast cancer – and even the creation of a male contraceptive pill. Dalton went into partnership with a fledgling pharmaceutical company to pursue the development of a class of drugs known as selective androgen receptor modulators, or Sarms. Andarine was the first. Several years later, Dalton went on to create a more refined version, known as ostarine,

which showed even greater promise. In clinical trials, elderly men given a 12-week course of the drug increased muscle mass and reduced fat, while improving their ability to climb stairs by 15%. But the regulatory approval process for new drugs is long, and a subsequent trial in cancer patients failed to produce the desired results. Dalton recalls with a hint of disappointment how ostarine's development petered out, before adding: "But it's being used like crazy in the athletic community..."

### Unfair Advantage

As long as there have been competitive sports, there have been athletes looking for an edge. In the years since Dalton's discovery of andarine, other Sarms and experimental medicines have emerged with the potential to enhance performance. Many of them have found their way out of the laboratory and into the gym, where they are increasingly considered a safer, more convenient alternative to steroids.

This new wave of drugs is attractive for a number of reasons: the perception that the side effects are milder; the higher odds of dodging anti-doping

tests; the fact that they can be taken orally rather than by injection. The downside? None has been approved for human consumption.

In 2006, drug testing researchers published a paper noting that, while Sarms were "not yet commercially available, their potential for misuse in sports is high". Sarms were added to the World Anti-Doping Agency's list of prohibited substances in 2008. Fewer than 10 positive tests were recorded in the first three years of monitoring. By 2016, it was 39. In 2017, the number of cases rose to 66 – four more than erythropoietin, the sought-after blood booster that eventually caught out Lance Armstrong, better known as EPO.

Experts warn that these figures underestimate the reality. The authors of one 2018 study wrote that, as a result of the lack of effective urine testing,

the "number of Sarm doping cases is expected to be significantly higher" than official figures suggest.

It's not just professional athletes turning to experimental medicines to improve their performance. Google searches for Sarms have been rising steadily over the past five years. Recent analysis of London's "fatbergs" – lumps of oil and organic matter found in the capital's sewers – revealed ostarine was present in greater quantities than MDMA and cocaine. High-profile doping cases involving Sarms and other similar substances have served to raise their profile further. In April, Jarrell Miller was forced to abandon his world heavyweight title fight against Anthony Joshua after testing positive for GW501516, also known as Cardarine, an experimental endurance-building drug. (Cardarine, while widely marketed as a Sarm, acts on a different receptor in the body.) When the news broke, one user of a Sarms Facebook group observed: "If sports stars are getting caught, it means that shit works."

### A Call to Sarms

As demand rises, a host of companies has sprung up to supply these new drugs online. No doubt wary of the repercussions of selling unlicensed medicines, many devote prominent sections of their websites to legal disclaimers. Max Muscle Labs, for example, describes its products as "research laboratory chemicals" and warns prospective customers: "Under no circumstances are these products sold for human consumption."

Other, more brazen distributors sell Sarms alongside protein powders and weight-loss pills. Peakbody Fitness describes Sarms as "the latest innovative supplement to gain traction within the bodybuilding industry" and boasts of benefits including improved stamina, rapid fat loss and lean muscle growth.

Andy, a tennis coach in his late thirties, first noticed Sarms being advertised online around two years ago. He recalls seeing them marketed as a "steroid alternative that would give you similar effects". Andy had been going to the gym for two decades, working out three or four times a week. The sales pitch for Sarms instantly appealed. "I'm always looking at supplements, but I was never going down the steroids route," he says. "For me, the health risks were always too high."

Andy began to do further research. He joined Facebook groups, watched YouTube videos and even read scientific papers. "I wanted to make sure that,

### Swollen Claims

The lack of research isn't the only problem. An analysis\*\* of Sarms products bought online found few were the real deal

48%

Did not contain any Sarms

39%

Contained other unapproved drugs

9%

Didn't contain any active substances

59%

Had substances in different amounts than stated on the label

"On web forums, users seek advice about rashes, impotence and eyesight problems"

MANY WHO STEERED CLEAR OF STEROIDS ARE SWALLOWING SARMS' DANGEROUS CLAIMS

if I was going to do it, it was as safe as it could be," he says. What he found reassured him. So, around a year after he first heard of Sarms, he ordered some ostarine online. Soon enough, he began to notice changes in the mirror: he looked leaner, more muscular. The only downside was the occasional headache. Andy went on to try another Sarm named LGD-4033, which, he says, increased his biceps curl by nearly a quarter. But after two Sarms cycles, he decided that was enough. He still had lingering concerns about the long-term health implications. "Once there's more research, maybe I'd take them longer," he says.

### Pill Pushers

Online forums are full of reports like Andy's. Users describe significant strength gains and upload before-and-after pictures of their Sarms-assisted body transformations. Almost as frequently, they seek advice regarding unexpected side effects. Complaints include high blood pressure, hair loss, skin rashes, impotence and tunnel vision. Problems with eyesight appear to be particularly common; several users claim that andarine has given their vision a green or yellow tinge. For some, this is no cause for concern. A week and a half into a course of andarine, one user posted: "I started getting the vision side effects, so that could be an indicator of [good] quality."

At first, 37-year-old personal trainer Allan dismissed Sarms as just another fitness fad. "There are a lot of supplements on the market that say they do this and that, but most of the time they do absolutely nothing," he says. His opinion changed when he started seeing YouTubers he respected recommending them. "I was sitting up

thinking, alright, I'm interested now," he says. Like Andy, Allan had never taken steroids but, having reached his mid-thirties, was intrigued to discover a supplement that could help him maintain his athletic performance. Still, he was cautious. He placed an order for ostarine, which he had seen described as one of the mildest Sarms, and started out on what he believed was a small dose.

The problems started almost immediately. Allan took his first dose

56% MORE THAN HALF OF IPED USERS IN THE UK REPORT THAT IMPROVING THEIR APPEARANCE IS THEIR MAIN MOTIVATION

ARTWORK: PETER GRONTHIER | \*\* JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION



at lunchtime, then left the house to run some errands before going to the gym. Within hours, he became anxious and was overcome by a general sense of unease. Allan hoped that these feelings would fade with time. Instead, they grew worse.

"The anxiety was constant," he says. "After just over two weeks, I was, like, this isn't for me." Before giving up on Sarms, he went online to seek advice about his symptoms. He recalls being told: "Man up. You'll get through it. You'll be growing in no time."

However, Allan decided to follow his instincts. "I'd rather have my mental health intact than have slightly bigger muscles."

Browsing Facebook groups dedicated to discussions about Sarms, they can appear awash with contradictory information and anecdotal advice. New users are frequently told, in no uncertain terms, to do their own research. But knowing which sources are safe to trust is hard. Scientific papers detailing clinical studies of Sarms can be difficult to understand for the layman. It's a lot easier to seek out authoritative-sounding voices on YouTube or social media.

### Uncertain Terms

Dr Ian Boardley is a senior lecturer in sports psychology at Birmingham University, where he researches the mindset behind use of performance-enhancing drugs. He tells me there is no shortage of experts online, but the advice they offer tends to skew positive. "If it's someone using the drugs themselves, it's in their interest to believe that they can use them safely," says Boardley. "I think that's happening with Sarms." He tells me that many users conduct significant amounts of research into their chosen substances, but the conclusions they draw are not necessarily accurate. "One of the things we often see is the distortion and selective use of information to support their behaviour," he says. Those views may then be accepted unquestioningly by other users. "They key in on the cherry-picked information," says Boardley. "It's quite a dangerous process."

Dalton, the scientist who first created Sarms, is concerned by reports that ostarine users are taking daily doses of 25mg or more – several times in excess of the 3mg measures used in his early trials.

**58%** MORE THAN HALF OF IPED USERS EXPERIENCE TESTICULAR ATROPHY, WHILE OTHERS REPORT SIDE EFFECTS SUCH AS REDNESS AND SWELLING



LINKED TO HEART AND LIVER PROBLEMS, SARMS AREN'T JUST A SHOT IN THE ARM FOR MUSCLE

**Compare and Contrast**  
Though in some ways similar, steroids and Sarms are not the same. Here's how they stack up

**Also known as...**  
**Steroids:** Deca, Dbol, andro, tren  
**Sarms:** Andarine, ostarine  
**Generally taken...**  
**Steroids:** As an injection  
**Sarms:** In pill form

**The similarities:**  
Both work by binding to your androgen receptors. This triggers changes to your DNA, which ultimately increase your muscle cells' potential for growth.

**The difference:**  
When you use steroids, enzymes in the prostate and scalp cause the extra testosterone to metabolise into DHT. This binds to your androgen receptors five times

more strongly than testosterone, which can lead to issues with prostate health, hair loss and acne. Sarms do not trigger this reaction, and so are said to be "tissue selective".

**X3** THE NUMBER OF GOOGLE SEARCHES FOR THE TERM "SARMS" HAS TRIPLED IN THE PAST TWO YEARS ALONE. THE DEMAND IS GROWING FAST

**"The black market in Sarms is rampant, and little can be done to control it"**

"We chose the 3mg dose for very good reasons," says Dalton, adding that anyone taking the drug in larger quantities risks shutting down their body's natural testosterone production. Beyond that, he says, who knows what might happen? Some tests have given higher doses to cancer patients but, he warns, "Nobody has studied the effects at higher doses in an otherwise normal, healthy and vibrant person."

I ask Dalton about the arguments that I've heard from users: that Sarms are a safer alternative to steroids; that an absence of serious short-term symptoms means negative long-term effects are unlikely. "There are a lot of assumptions

that go into those statements, right?" he says. "I'll just leave it at that."

Aaron, a 33-year-old from Stoke-on-Trent, used to take steroids but stopped after suffering severe acne. Two years

ago, he saw a YouTube video recommending Sarms that "basically said they've got dead-low risks and all the benefits of anabolic steroids".

His first course of ostarine seemed to work. "I put on quite a bit of

muscle. I was very lean. I looked really, really good in a very short time period," he says. Sure, the effects were less dramatic than when he had taken steroids, but

Sarms seemed much safer, and the side effects far less severe. Aaron placed another order and went on to run a few more cycles.

Halfway through his fourth cycle, however, Aaron noticed an alarming development: his testicles had shrunk to half their original size. "I just woke up one day and they were gone," he says. He ditched the Sarms immediately and began to take hormones in an attempt to kick-start his body's testosterone production. It didn't work. "I was doing everything I could, but they just wouldn't come back," he says. "So, I made the decision to turn to anabolics." Aaron believes he was sold oral steroids under the guise of Sarms, which caused his body's natural testosterone production to shut down. He is now

resigned to permanently cycling steroids. "I'm ready to do what I'm doing now for the rest of my life," he says.

### Wresting Back Control

Despite the unknowns and risks associated with Sarms, their widespread availability can contribute to a perception of safety. Michael, a 27-year-old factory worker, has been taking Sarms irregularly for three years. I ask him how much research he did before initially taking them. "A little bit," he says. "But the thing is, if they're being sold legally, it's highly unlikely that they're going to be detrimental to your health. They sell these on social media. And there are legitimate companies that sell these products. As long as you don't hammer it..."

But that's not the case. In 2017, US regulators launched a crackdown on

Sarms. Donald D Ashley, compliance office director at the FDA's Center for Drug Evaluation and Research, said: "We are extremely concerned about unscrupulous companies marketing bodybuilding products with potentially dangerous ingredients." Ashley warned that Sarms were "associated with serious safety concerns, including the potential to increase the risk of heart attack or stroke and life-threatening reactions, like liver damage". He added: "We will continue to take action against companies marketing these products."

Here in the UK, there has been little public discussion of what should be done. A spokesperson for the Food Standards Agency confirms that Sarms are considered what are called "novel foods" and that none has yet been authorised for sale, but says enforcement is the responsibility of local authorities. In May, Rochdale Council announced it had seized £3,000 worth of Sarms from a supplement shop. If there have been other seizures elsewhere in the country, they don't seem to have been reported. Besides, how much impact would seizures have on supply or demand? There are an estimated one million steroid users in Britain. How many would take a pill with

similar effects that can be easily ordered online?

In the early days of Sarms development, Dalton recalls trying to

curb the black market of companies exploiting his discoveries. "We reached out with cease-and-desist letters to a couple of them; we reached out to the FDA to try shutting them down. But it's rampant, and there's really little that can be done to control it."

So, over the past few years, Dalton has adopted a different strategy. He now serves on the scientific advisory board at the Partnership for Clean Competition, helping to detect Sarms use in professional sports. "As a scientist, I jumped into this with the idea of doing something good," he says. "To make a drug that could help cancer patients, or others – that was my hopeful contribution. Now, I've turned my efforts to making sure that it's not used for things that it shouldn't be used for, and that people don't do themselves harm by taking something we know very little about." 🗣️