SARMs

They’re on everyone’s lips. And, it would appear, in their mouths. So, what are they? And are they a safe, side effect free, alternative to traditional anabolic steroids?

A bit of background first. Steroids - both oral and injectable - used for gym purposes are both *anabolic* (muscle building) and *androgenic* (effecting the sexual organs, skin, hair and prostate), some to a lesser or greater degree. The Holy Grail was to develop a substance which was purely anabolic with zero androgenic properties. Not an easy task, but some areas of progress were made.

SARM is an acronym for *Selective Androgen Receptor Modulator*. Sounds fancy, but what doesn’t if the words are big enough? Many SARMs are (or were) under development but not yet available for clinical use. The mechanisms that contribute to activation and selectivity of SARMs still remain poorly understood. Technically, anything that binds to the androgen receptor and activates it in certain tissues more than others can be classified as a SARM. They are allegedly not a steroid.

In an ideal world, an anabolic SARM is defined as: orally active, with once a day dosing, anabolic effects on bone and muscle and no (or lesser) action on the prostate gland. Another key effect of a perfect SARM is to leave the signaling pathways between brain and bollocks intact, preserving normal sperm production and testicular size. The emphasis is clearly on **selective**. ‘Go to the muscles and stay away from where you’re not wanted’ is their directive. But this hasn’t really happened. Nothing developed is very close to 100% selective. Blood tests confirm this. Some actually lower testosterone levels.

I posed the SARM conundrum to a forum of experts in the field. William Llewellyn (author of the excellent “Anabolics”) kindly replied; “SARMs are not free of steroid activity. They share binding/activation of the androgen receptor. As such they have varying degrees of related side effects like hepatotoxicity and HPTA disruption. There are multiple drugs of this class. These too vary with regard to side effect intensity.” Thanks, Bill. This means they do act like a steroid. They can fuck with your liver and cock up natural testosterone production. Deranging of good and bad cholesterol levels is common. He adds; “SARMs work essentially the same way as oral AAS. They are generally less androgenic”.

How do they work? SARMs developed to date are resistant to 5α-reduction and aromatization. This is thought to be one likely reason. It’s complicated. Let me explain.

SARMs don’t mix with 5α-reductase enzyme. So, the SARM is not converted to the very androgenic hormone DHT. That’s the one who likes to attach itself to hair, skin and the prostate, resulting in the side effects seen during anabolic steroid use such as balding, body hair growth and acne. This is a reason for at least some of their tissue selectivity.

The other enzyme involved is aromatase, the enzyme that converts testosterone to oestrogen. In theory, SARMs cannot be aromatized, putting all their effects to androgen receptor binding and not conversion to oestrogens. This should result in quality lean muscle gains and no side effects. Win-win! …In theory.

The first SARMs were reported in 1990s. Since then, SARMs with different structures and a range of tissue selectivity have been discovered. All the pharmaceutical major players had a SARM in development 10 years ago. We’re still waiting.

Among the SARMs studied, Ostarine (mk 2866) recently showed, in a successful completed phase II clinical trial (a test on actual humans, not rats or cells in a dish), to increase the lean body mass and physical performance in patients of both sexes affected by cancer related muscle wasting. Don’t get too excited, this was in ruined old people. Not athletes.

In another more curious study, Ostarine suppressed the testosterone signaling hormones LH and FSH in rats. The suppressive effects of this class of SARM suggested potential use as male contraception. Hmm. This is not reassuring for a supplement that is supposedly ‘nonsteroidal’ and ‘side effect free’.

A large number of SARMs have undergone preclinical studies and showed promise; however, as much of the data generated by the drug companies has remained unpublished, comparisons of potency and tissue selectivity among different SARMs are difficult to judge.

At the doses that actually have been tested in healthy volunteers, SARMs induce modest gains in lean body mass, which are nowhere near the gains reported with doses of testosterone. Gains of 1.0 to 1.5 kg in fat-free mass with SARMs over 4–6 weeks compared with the 5–7 kg gains in fat-free mass with 300 and 600 mg doses of testosterone enanthate.

So why do some people report get good gains from SARMs? The jury is still out, but there seems to be a growing suspicion that what are unknowingly sold as SARMs are possibly variants of anabolic steroids. The side effect profile, especially blood work, suggests this.

Dr. Kalman (a clinical researcher who has consulted GTx, the pharmaceutical company that developed Ostarine) warns “what’s sold on the research chemical market might not match the exact chemical structure of the investigational drug described in the GTx patents as no publication reveals its exact configuration.” Go figure.

SARMs do hold promise as a new class of anabolic therapies for a variety of ailments, such as frailty, aging and chronic illnesses, cancer related muscle wastage and osteoporosis. For body building? Probably not.

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