

NEW SUBSTANCES, NEW CONCERNS - SELECTIVE ANDROGEN RECEPTOR MODULATORS

Dušan Antić*

AU "Lilly Drogerie", Belgrade, Serbia

*dulejdza@yahoo.com

Many athletes have used selective androgen receptor modulators (SARMs) recently. They are experimental drugs which are being tested as a potential therapy for increasing both muscle and bone strength in the elderly or for patients who need it for medical reasons. SARMs include various substances, such as ligandrol, ostarin and testolone. Up to now there are no completed studies which would confirm their positive effects on human body. SARMs, as sports supplements, can be often bought online. Among other things, they are stated to increase muscle growth and strength, make fast recovery after injuries, without side effects of steroids. However, there are no safety studies of SARMs. The FDA has released data linking the usage of SARMs with both liver and heart failure, myocardial infarction, stroke. In addition, supplements often contain SARMs in combination with hormone and metabolic modulators, such as GW1516 (also known as cardarine or endurobol). GW1516 was originally development as a treatment for diabetes, obesity and cardiovascular disease. It was discontinued later after it was linked to the rapid development of cancer during trials on mice. When it comes to sport, as a doping in sport SARMs can be found on the WADA Prohibited List, in section S.1. Anabolic Agents. If an athlete would have a doping positive sample on SARMs, he or she would be punished with 2 to 4 years period of ineligibility.

References

1. Zhang X, Sui Z. Deciphering the selective androgen receptor modulators paradigm. *Expert Opin Drug Discov* 2013;8(2):191-218.
2. Geyer H, Schänzer W, Thevis M. Anabolic agents: recent strategies for their detection and protection from inadvertent doping. *Br J Sports Med* 2014;48:820-826.

NOVE SUPSTANCE, NOVA ZABRINUTOST - SELEKTIVNI MODULATORI ANDROGENIH RECEPTORA

Dušan Antić*

AU „Lilly Drogerie“, Beograd, Srbija

*dulejdza@yahoo.com

Poslednjih nekoliko godina mnogi sportisti su upotrebljavali Selektivne modulatore androgenih receptora (eng. *Selective Androgen Receptor Modulators* - SARMs). SARMs su eksperimentalni lekovi koji se ispituju kao potencijalna terapija za povećanje mišićne snage i jačine kostiju kod starijih ljudi ili kod onih kojima je iz medicinskog razloga to potrebno. U SARMs spadaju različite supstance, kao što su ligandrol, ostarin, testolon. Još uvek nema završenih studija koje bi potvrdile njihov efekat i iz tog razloga nisu dozvoljeni za humanu upotrebu. SARMs se kao sportski suplementi uglavnom mogu kupiti preko interneta. Tamo se, između ostalog, navodi da povećavaju rast i snagu mišića, ubrzavaju oporavak nakon povreda i sve to bez neželjenih efekata steroida. Međutim, nijedno istraživanje još nije potvrdilo bezbednost SARMs. Američka FDA je iznela podatke koji dovode u vezu upotrebu SARMs sa otkazivanjem jetre, srčanom slabošću i infarktom miokarda kod onih koji su koristili. Dodatno zabrinjava što se SARMs često daju u kombinaciji (ili im budu dodaci koji nisu deklarirani) sa hormonskim i metaboličkim modulatorima, kao što je GW1516 (poznat još i kao kardarin ili endurobol). GW1516 je razvijen kao potencijalna terapija za dijabetes, gojaznost i kardiovaskularne bolesti, ali se odustalo od toga jer je često izazivao kancer kod eksperimentalnih miševa. Ako govorimo o sportu, SARMs se nalaze na *Listi zabranjenih supstanci i metoda u sportu* koju objavljuje Svetska Antidoping Agencija, u odeljku *S.1 Anabolički agensi* i predstavljaju doping u sportu. Ukoliko bi sportista bio doping pozitivan na SARMs bio bi kažnjen sa 2 do 4 godine zabrane učestvovanja u sportu.

Literatura

1. Zhang X, Sui Z. Deciphering the selective androgen receptor modulators paradigm. *Expert Opin Drug Discov* 2013;8(2):191-218.
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