

New transdermal SARM drug for musclewasting offers hope for older cancer patients

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Muscle wasting that occurs as a result of cancer negatively impacts the well-being and recovery prospects of millions of patients, particularly the rapidly-growing elderly populations in Western societies. Drugs called selective androgen receptor modulators (SARMs) offer hope for these patients, and a new SARM for transdermal administration is promising excellent efficacy without harming liver function and HDL levels. Results and conclusions were presented Tuesday at the joint meeting of the International Society of Endocrinology and the Endocrine Society: ICE/ENDO 2014 in Chicago.

SARMs are able to stimulate the growth of muscle with effects similar to those seen by use of traditional anabolic steroids but without the undesirable side effects of those established muscle-building drugs, in particular, the <u>adverse effects</u> on prostate health that can occur from their use.

There are several SARMs currently in human clinical trials, with successful animal studies having already been conducted with these compounds. However, all of these drug candidates have been developed for oral administration. Because of potential adverse effects on <u>liver function</u> and on depression of HDL levels (the "good" cholesterol), the orally-administered drugs suffer limitations to their full therapeutic potential to grow muscle and strengthen bone.

A similar situation for oral delivery exists in the administration of male hormone therapy. Here, the adverse impacts on liver health and HDL



levels can be overcome by the use of skin patches or gel that release a drug directly into the body through the skin, i.e., transdermal application. Recognizing the similarity, scientists at the pharmaceutical company Novartis therefore developed a SARM specifically for transdermal administration. In describing their drug candidate, AUSRM-057, Senior Investigator Dr. Hans-Joerg Keller of the Novartis Institutes for BioMedical Research, Basel, Switzerland said, "AUSRM-057 is the first SARM with excellent skin permeation properties which may exploit the full therapeutic potential of SARMs."

In this preclinical drug discovery project, Novartis researchers used classical techniques of drug development, first identifying a compound with good potential as a muscle-building drug in cell culture. Skin permeation tests, also conducted in cell culture, predicted that their drug candidate would show good penetration of skin in transdermal delivery. The drug did work as predicted in building muscle when tested in rats and did not show the masculinizing effects of SARMs that can harm the prostate gland. The authors are optimistic regarding the prospects of this drug candidate to become the first in its class to utilize not only the advantages SARMs have displayed for muscle growth without negative impacts on prostate health, but, by avoiding the digestive system, to also avoid adverse effects on liver function and HDL levels.

Provided by The Endocrine Society

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