

Molecule of the Week

Withaferin A

December 19, 2016

Jenny Craig, you may have a new competitor. What molecule am I?

Withaferin A is a natural product with a steroidal structure. In 1962, Israeli chemists Asher Lavie and David Yarden isolated it from the leaves of the Indian plant *Withania somnifera*. It is also found in other members of the Solanaceae (nightshade) family. The plant has long been used in traditional ayurvedic medicine.

Withaferin A has many potential pharmaceutical uses because of its anti-inflammatory, anticarcinogenic, and cardioprotective properties, among others. It also has been used as a flavoring and aroma agent. Its biological activity is attributed largely to its double bond and epoxide ring.

Considerable work has been done to develop withaferin A as a medicine, but this year Umut Ozcan and colleagues at Boston Children's Hospital discovered that it may have another beneficial effect. Resistance to the hunger-regulating hormone leptin has long been known to contribute to obesity. The researchers found that withaferin A acts as a "leptin sensitizer". Their study on obese laboratory mice showed that the animals, even on high-fat diets, [lost 20–25% of their body weight](#) when treated with withaferin A.

Applying these results to obese humans could be dicey. Although humans might lose weight with withaferin A, they may not change their unhealthy habits and lack of proper exercise. The problem of human obesity is complex, and many factors will have to be considered before a "magic" pill is available.

<https://www.acs.org/content/acs/en/molecule-of-the-week/archive/w/withaferin-a.html>