The MOSS NUTRITION REPORT

Jeffrey Moss, DDS, CNS, DACBN ⇆ jeffmoss@mossnutrition.com ⇆ 800-851-5444 ⇆ www.MossNutrition.com

Product Review

March 2019 #323

NEW – RESVERATROL SELECT™

Based on a continual flow of positive research and clinical reports and many requests, we are now introducing our new resveratrol product, **Resveratrol Select™.** It contains a high-quality trans-resveratrol from *Polygonum cuspidatum* plus the complementary nutraceutical, quercetin. What follows are highlights from an excellent review paper on the benefits of resveratrol. Next, given that most of the research is either *in vitro* or animal-based, I will highlight a recently published positive clinical study on osteoarthritis where resveratrol was employed in a way used by many patients, as an adjunct to NSAID use.

AN OVERVIEW OF THE HEALTH BENEFITS OF RESVERATROL

What follows are some of the key points made in the recently published paper "Health benefits of resveratrol administration" by Galiniak et al (Galiniak S et al. *Acta Biochimica Polonica*, Vol. 66, No., pp. 13-21, 2019).

Basic information

"Resveratrol (3,5,4'-trans-trihydroxystilbene) is a polyphenolic phytoalexin belonging to the stilbene family. It is a natural dietary plant compound that occurs mainly in grape skin and seeds but is also found in wines and various other types of plant foods…Resveratrol is synthesized by more than 70 species of plants in response to infection, stress, injury, bacteria or fungal infections, and UV-irradiation."

Please note from the above quote that the main reason resveratrol exists in the plant kingdom is to protect plants from various environmental stressors. Therefore, the role resveratrol plays in human physiology is not that different from the role it plays in plant physiology.

From an historical standpoint:

"Resveratrol was first reported and isolated from white hellbore by a Japanese researcher Takaoka in 1939."

Metabolism

"Resveratrol has a short half-life of approximately 1.5 h due to rapid absorption in the intestine and degradation in the liver. After consumption, 77-80% of resveratrol is absorbed into the blood stream by active transport via intestinal epithelial cells, after which it binds to albumin and lipoproteins. This polyphenol is easily released from the complexes and can be transported into cells. About 49-61% of resveratrol is excreted in the urine."

Clinical overview

"Resveratrol reveals a wide range of biological properties, including anti-glycation, antioxidant, anti-inflammation, neuroprotective, anti-cancer, and anti-aging activity in various *in vitro* and *in vivo* experimental models."

Anti-glycation

I am sure most of you are aware of the common laboratory analyte, hemoglobin A1C or glycosylated hemoglobin, that is used to ascertain diabetic status. This is just one example of a whole family of substances where a sugar molecule has combined with, or "glycosylated" or "glycated" a protein molecule, generally leading to a decrease in optimal metabolic and physiologic activity of the protein molecule. More specifically, Galiniak et al describe glycation in the following quote:

"Glycation is a nonenzymatic reaction between proteins and reducing sugars, leading to the formation of advanced glycation end products (AGEs). Advanced glycation end products accumulate and cause damage at the tissue and

cellular level, including lipid peroxidation, endothelial dysfunction, changes in protein structure, and stimulation of inappropriate cellular activity."

Several studies have noted that resveratrol possesses antiglycation activity:

"Many reports have confirmed that resveratrol displays antiglycation activity…"

With the above in mind, the authors conclude:

"…the results indicate that resveratrol may be considered as a beneficial anti-glycation agent in *in vitro* and *in vivo* experiments as well as in the treatment of diseases associated with increased glycation."

Antioxidant activity

As you probably know, several studies have established that resveratrol is a particularly powerful antioxidant:

"Resveratrol is confirmed to be a powerful antioxidant whose activity is associated with presence of three hydroxyl groups in its structure. Resveratrol has an inhibitory effect on excessive ROS production, aberrant mitochondrial distribution, and lipid peroxidation."

Anti-inflammatory activity

The following quote describes the specifics of the anti-inflammatory activity of resveratrol:

"Resveratrol suppresses IL-6 transcription and translocation, resulting in attenuation of its secretion by macrophages. Likewise, the administration of resveratrol to monocyte cultures leads to a reduction in the expression of inflammatory mediators: TNF-α and IL-8, without inducing cytotoxicity."

From a clinical standpoint, resveratrol demonstrates anti-inflammatory activity in the following ways:

"Anti-inflammatory activities of resveratrol are observed…in the case of hyper-acute small intestinal inflammation as well as in immune-mediated diseases. Moreover, it prevents acceleration of cholesterol accumulation and disturbances of macrophage lipid homeostasis after induction by glycation products."

A CLINICAL STUDY ON THE USE OF RESVERATROL AND AN NSAID WITH OSTEOARTHRITIS

As was mentioned above, much of the research on resveratrol is either laboratory- or animal-based. Therefore, in closing I wanted to highlight a clinical study on the use of resveratrol in a very common situation seen with patients – osteoarthritis where an NSAID is already being employed. In "Resveratrol supplementation reduces pain and inflammation in knee osteoarthritis patients treated with meloxicam: A randomized, placebo-controlled study" by Marouf et al (Marouf BH et al. *J Medicinal Food*, pp. 1-7, 2018) 110 males and females aged 45-75 years suffering from knee osteoarthritis were evaluated. In the study 60 were included in a group using 15 mg meloxicam plus 500 mg resveratrol daily for 12 weeks. 50 participants received 15 mg meloxicam plus a placebo for the same length of time.

The key findings of the study were as follows:

"The principal findings of the present study were: (1) resveratrol 500 mg per day administered as an adjuvant with meloxicam for 90 days reduced the pain severity in patients with mild to moderate radiological evidence of knee OA; (2) orally administered resveratrol at the mentioned doses significantly decreased serum levels of many inflammatory mediators such as TNF-α, IL-1β, IL-6, hsCRP, and complement proteins compared with placebo."

Next, are more specifics on the pain reduction:

"In the present study, the patients reported significant decreases in pain severity after 30 days of using resveratrol, reaching a maximum improvement after 60 days compared with baseline according to VAS-100 scores."

With the above in mind, Marouf et al conclude:

"In conclusion, this pilot study provides evidence of the role of resveratrol, administered as adjuvant with meloxicam, in improving pain and inflammation in patients with mild to moderate knee OA compared to placebo in the control group."