

## Study describes the phenolic characterization of Kemin's advanced spearmint extract

**Findings shed light on potential mechanisms of action for Neumentix™ Phenolic Complex K110-42, Kemin's cognitive performance ingredient.**

**Des Moines, Iowa** – September 26, 2016 - A mass spectrometric characterization of Kemin's dried spearmint extract, sold as Neumentix™ Phenolic Complex K110-42, revealed the presence of greater than 50 phenolic compounds—the most in-depth characterization of an aqueous spearmint extract to date. This comprehensive phytochemical analysis can be useful to test the authenticity of the product, and to assess the extract's biological properties.

The **study**, "Phenolic and Volatile Composition of a Dry Spearmint (*Mentha spicata* L.) Extract" conducted by researchers at the University of Parma, Department of Food Science, was published in *Molecules* in August 2016.

"Understanding the molecular profile of Neumentix was important in order for us to get at the underlying mechanisms of action responsible for the cognitive benefits we have observed clinically," said Kelli Herrlinger, principal scientist for the Human Nutrition and Health division of Kemin.

The ultra-high performance liquid chromatography-electrospray ionization-mass spectrometry (UHPLC-ESI-MSn) analysis revealed that the Phenolic Complex consists of a dynamic mix of antioxidant polyphenols and their derivatives including rosmarinic acid, salvianolic acids, caffeoylquinic acids, hydroxybenzoic acids, hydroxycinnamic acids, flavones and flavanones.

Head space solid-phase microextraction (HS-SPME) coupled with gas chromatography-mass spectrometry (GC-MS) technique characterized the volatile fraction of the extract, and molecules belonging to different chemical classes such as *p*-cymene, isopiperitone, piperitone, dihydroedulan II, menthone, *p*-cymen-8-ol and  $\beta$ -linalool.

"This study confirmed that Neumentix contains the key molecules that have exciting potential to impact cognitive performance," said Brenda Fonseca, global technical services manager for cognition for the Human Nutrition and Health division of Kemin. "This combination of important phytochemicals indicates that there may be at least four different mechanisms by which Neumentix has a positive impact on cognitive performance."

Research suggests that the key polyphenolic molecules contained in Neumentix such as rosmarinic and salvianolic acids may act to reduce oxidative stress, protect neurons, increase neurotransmitter levels and promote new neural growth, which are all thought to promote brain health and cognitive performance.

"After learning that rosmarinic acid and other key polyphenols may have potential cognitive benefits, our plant biologists began to explore botanical sources for these key polyphenols and identified spearmint as nature's ideal 'factory' for these molecules," said Herrlinger.

To develop spearmint plants with higher levels of these key polyphenolic molecules, Kemin's Specialty Crop Improvement team of expert plant scientists screened thousands of lines of spearmint and used traditional plant breeding methods to develop two proprietary lines of spearmint (KI110 and KI42).

Kemin grows acres of the advanced lines of spearmint on family owned farms in the USA. The spearmint is certified as "Sustainably Grown" by SCS Global Services.

To learn more about Kemin's spearmint extract's molecular profile and its potential mechanisms of action, visit Kemin at Booth II159 during **SupplySide West**, Oct. 4-8 in Las Vegas.

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