

Developers think neuroprotective compound agmatine is finally ready for prime time

By Hank Schultz , 20-Sep-2013

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Patience sometimes is rewarded. And the husband and wife team behind the commercialization of agmatine for neuroprotective dietary supplements believes now is one of those times.

Gad Gilad, PhD, and his wife, Varda Gilad, have been studying the naturally occurring molecule for almost two decades. With a product in online distribution and with favorable research piling up, Gad Gilad told NutraIngredients-USA that he believes the time is ripe for this slow ripening molecule.

Agmatine, a decarboxylated form of the amino acid arginine, was first discovered in 1910. Its neurological effects were discovered almost immediately when researchers found the compound could induce contractions in an excised cat uterus. But the effect required a massive dose. That, combined with a subsequently disproved belief that mammals do not naturally biosynthesize the compound, led research to languish for many years. But in the early 90s, the compound was found in mammalian brains, which is when research into the compound really took off and is when the Gilads entered the story.

"The compound is well known; our discovery was made in 1993 and 1994," said Gilad, who received his PhD in neurobiology from Cornell. *"After we discovered its neuroprotective properties we studied its metabolism and its mechanism of action."*

"We wrote a patent for the neuroprotective usage for agmatine. We eventually took it through the clinical trials and developed it as a dietary ingredient," he said.

Drug dead end

But the Gilads had a long row to hoe to bring the ingredient to market. Despite some very promising results and properties, the big pharmaceutical players passed on the compound. It's a story repeated elsewhere; efficacy was not the issue, intellectual property was.

"As we were coming from the health sciences, we initially were thinking of developing it as a drug for treating various conditions associated with nerve brain injury and neurodegenerative disorders," Gilad said.

"The drug industry was not enthusiastic in picking up compounds or entities that are not new chemical entities. Usage patents are less robust, because they don't have a handle on the synthesis of the molecule. Everyone can have access to it," he said.

One of the early applications of the molecule was in the bodybuilding field. Early indications showed the molecule inhibited the enzyme that breaks down nitric oxide, a compound that has been associated with vasodilation. More nitric oxide circulating in the blood, more blood flow, more muscle growth, or so the story went. But further research showed that the story was more complex, and that the body compensated for agmatine's inhibition of the enzyme's activity by pumping out extra amounts of the enzyme.

"They are using buzzwords. Nitric oxide is a buzzword," Gilad said. "All the claims for muscle protein synthesis are completely unsubstantiated. My prediction is that the hype there will pass. But what it did do was help bringing down the price of the raw material."

Neuroprotective qualities

Gilad & Gilad sells under the brand name Agmaset. More recent (and robust) research elucidates agmatine's neuroprotective functions in a variety of ways:

- Boosting neurotransmitter function
- Decreasing of pain message transmission, by preventing some mineral salts from getting into your neurons
- Inhibiting of destructive enzymes (called metalloproteases) that can kill nerves and create nerve pain
- protecting nerve cells from damaging AGEs (advanced glycation end products).

"It is helpful for neuropathies, which we can't say (in product marketing), but we can say 'for healthy nerve function.' But people with neuropathies are taking it," Gilad said.

The company is selling the product via its own online portal at the moment, but is seeking to pair up with national distributors, Gilad said. The potential is huge, he said.

"I think the market for neuropathies is estimated at \$20 million in just the United States. We are very confident (in the ingredient). We are looking for a big player in the arena to join us in the marketing of the ingredient," he said.

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