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Study: Cinnamon Inhibits Alzheimer's Disease

by Gil Ronen

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Cinnamon has properties that inhibit the development of Alzheimer's disease, according to a mouse model study carried out by researchers under the direction of Prof. Michael Ovadia of the Zoology Department at Tel Aviv University's George S. Wise Faculty of Life Sciences.

Several Life Sciences Faculty laboratories participated in the study, including those of Prof. Ehud Gazit (TAU's Vice President for Research and Development), Prof. Daniel Segal, and Dr. Dan Frankel, and their students: Anat Frydman Maor and Aviad Levin. The research findings were recently published in the scientific journal PLoS ONE.

Prof. Ovadia had found, in the course of past research, that an extract from the bark of the cinnamon plant possesses the ability to inhibit the infectivity of "enveloped" viruses, such as influenza, herpes, HIV, and other viruses. A later study showed that the same extract (one that is highly ultraviolet absorbent), also inhibits the accumulation of the β -amyloid (β) polypeptide assemblies that cause neuron destruction and result in the development of Alzheimer's disease.

The study was conducted in two stages. In the first, in vitro stage, the researchers demonstrated the ability of the cinnamon-bark extract to inhibit formation of the toxic intermediate β -amyloid oligomers and of β fibrils. It also became apparent, to the researchers' surprise, that the extract was able to disassemble large intermediate oligomers and β fibrils that had already formed. Thus, the extract may retroactively correct damage that has already occurred, meaning that, should it eventually be used prophylactically against Alzheimer's disease, it might also be useful in restoring functions impaired by the accumulation of oligomers and/or fibrils.

In the second stage of the study the researchers tested the substance on experimental animals commonly used in Alzheimer's research: fruit flies genetically altered to produce the β peptide, and transgenic mice with five mutations that lead to the rapid development of Alzheimer's disease.

In both models Alzheimer's disease shortens the affected animals' lifespan and causes either a reduction in their normal activity or induces aggressive behavior. When the cinnamon extract was added to the flies' food or to the drinking water of the mice, it inhibited the development of Alzheimer's disease: subsequently, the treated animals resembled healthy members of their species, both behaviorally and in terms of longevity.

Protection from infectious agents

Why cinnamon? Prof. Ovadia's answer to this question is a surprising one. Fifty years ago he won second place in Israel's National Bible Quiz for Youth. One of the quiz questions had to do with the composition of the holy ointment with which the High Priests; the Kohanim; anointed themselves before making ritual animal sacrifices.

"I had a blackout and almost lost the points, but fortunately managed to remember the components mentioned in the Ki Tisa portion and answered correctly just before the gong sounded," Prof. Ovadia recalled. "I would recollect that question with dread whenever I read this Torah portion."

"You have to take the bad along with the good, however, and now something good has come of it; one day it occurred to me that there must have been a good reason to provide the Kohanim with protection against the severe infection that can result from contact with animals and the blood pooling around them. Because most of the components of the anointing oil are unknown to us today (sweet calamus, for instance), I focused on cinnamon. And, in fact, we succeeded in isolating from it a substance with important medicinal properties, as noted above."

Prof. Ovadia, who had already gained recognition for his work with snake venoms, thus decided to strike out on a different

nt path and study the properties of cinnamon.

Caution: too much raw cinnamon is dangerous

Prof. Ovadia: "There is a problem with this; raw cinnamon also contains substances that are harmful to the liver. Whereas one may consume 6 to 10 grams per day without damaging the liver, to reap the substance's medicinal benefits, however, one would have to consume tens of grams per day at least, which starts to become dangerous. For this reason we developed a means of extracting the active substance from the cinnamon and separating it from the toxic substances."

Tel Aviv University has submitted a patent application for the substance and its activity, via its technology transfer company, Ramot.

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