

Researcher determines link between foie gras and diseases

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University of Tennessee Graduate School of Medicine professor and researcher Alan Solomon, M.D., director of the Human Immunology and Cancer/Alzheimer's Disease and Amyloid-Related Disorders Research Program, led a team that discovered a link between foie gras prepared from goose or duck liver and the type of amyloid found in rheumatoid arthritis or tuberculosis.

Their experimental data, appearing in this week's edition of the *Proceedings of the National Academy of Sciences*, has provided the first evidence that a food product can hasten amyloid development.

Amyloidosis is a disease process involving the deposit of normal or mutated proteins that have become misfolded. In this unstable state, such proteins form hair-like fibers, or fibrils, that are deposited into vital organs like the heart, kidneys, liver, pancreas and brain. This process leads to organ failure and, eventually, death. There are many types of amyloid-related diseases in addition to rheumatoid arthritis, such as Alzheimer's disease, adult-onset (type-2) diabetes and an illness related to multiple myeloma called primary or AL amyloidosis, an illness that has been a particular focus of study in the Solomon laboratory.

Foie gras is a culinary delicacy derived from massively enlarged fatty livers of ducks and geese. It is produced by gorging the fowl over several weeks. Solomon and his research team analyzed commercially sold foie gras from the U.S. and France and found that it contained a type of amyloid called AA. Amyloid deposits are commonly found in waterfowl,

but this condition is noticeably increased in force-fed birds. In their study, mice prone to develop AA amyloidosis were injected or fed amyloid extracted from foie gras. Within eight weeks, a majority of the animals developed extensive amyloid deposits in the liver, spleen, intestine and other organs.

Based on the findings of the study, Solomon and his team concluded that this and perhaps other forms of amyloidosis might be transmissible, like “mad cow” and other related diseases. Until now, no other infectious sources of food products have been found.

“It is not known if there is an increase of Alzheimer’s disease, diabetes or other amyloid-related disease in people who have eaten foie gras,” cautioned Solomon. “Our study looked at the existence of amyloid fibrils in foie gras and showed that it could accelerate the development of AA amyloidosis in susceptible mice. Perhaps people with a family history of Alzheimer’s disease, diabetes, rheumatoid arthritis or other amyloid-associated diseases should avoid consuming foie gras and other foods that may be contaminated with fibrils.” Other investigators have reported that meat derived from sheep and seemingly healthy cattle may represent other dietary sources of this material, he said.

People develop diseases for many reasons. “Eating foie gras probably won’t cause a disease in someone who isn’t genetically predisposed to it,” Solomon explained. “More critical is determining what causes these diseases in the first place and, most important, developing new means of diagnosis and treatment designed to rid the body of harmful amyloid deposits or preventing them from occurring or progressing. Indeed, this is the very focus of the work of my team at the University of Tennessee, and we are all deeply committed to achieving this goal. I am hopeful that our research efforts and those of other scientists throughout the world will help those afflicted with these diseases, which exert such a devastating toll on patients and family members alike.”

Source: University of Tennessee at Knoxville

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