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Brain Food

A Mediterranean-style diet may slow memory loss, even if adopted late in life

Whenever the fictional character Popeye the Sailor Man managed to down a can of spinach, the results were almost instantaneous: he gained superhuman strength. Devouring any solid object similarly did the trick for one of the X-Men. As we age and begin to struggle with memory problems, many of us would love to reach for an edible mental fix. Sadly, such supernatural effects remain fantastical. Yet making the right food choices may well yield more modest gains.

A growing body of evidence suggests that adopting the Mediterranean diet, or one much like it, can help slow memory loss as people age. The diet's hallmarks include lots of fruits and vegetables and whole grains (as opposed to ultrarefined ones) and a moderate intake of fish, poultry and red wine. Dining mainly on single ingredients, such as pumpkin seeds or blueberries, however, will not do the trick.

What is more, this diet approach appears to reap brain benefits even when adopted later in life—sometimes aiding cognition in as little as two years. “You will not be Superman or Superwoman,” says Miguel A. Martínez González, chair of the department of preventive medicine at the University of Navarra in Barcelona. “You can keep your cognitive abilities or even improve them slightly, but diet is not magic.” Those small gains, however, can be meaningful in day-to-day life.

FROM FORK TO BRAIN

SCIENTISTS LONG BELIEVED that altering diet could not improve memory. But evidence to the contrary started to emerge about 10 years ago. For example, Nikolaos Scarmeas of Columbia Uni-

versity and his colleagues collected information about the dietary habits and health status of about 2,000 Medicare-eligible New Yorkers—typically in their mid-70s—over the course of four years on average. In 2006 the investigators reported that tighter adherence to a Mediterranean diet, which had previously been linked to a lower risk of cardiovascular disease, was associated with slower cognitive decline and a lower likelihood of acquiring Alzheimer's disease. Because the researchers merely observed dietary patterns and did not control them—as would be the case in a clinical trial—doubts lingered, however. It was still possible that the apparent brain benefit was the result of chance or some other trait common to folks who consistently follow a Mediterranean diet in the U.S., such as educational achievement or particular life choices.

Seven years later researchers pinned down some answers. In 2013 Martínez González and his colleagues published findings on their massive PREDIMED study, an experiment that included almost 7,500 people in Spain. (PREDIMED stands for Prevention with Mediterranean Diet.) The investigators randomly assigned study subjects to one of two experimental groups. In the first, participants followed the Mediterranean diet with an additional helping of mixed nuts; in the second, they also adhered to the Mediterranean diet but were given additional extra virgin olive oil. (Researchers felt that providing extra nuts and oils at no cost to participants would guarantee that certain healthy fats were eaten in quantities large enough to have measurable effects on the study's outcomes.) The control group, against which the results of the experimental groups would be compared, was in-



structed generally on how to lose weight. Its members were given advice on eating vegetables, meat and high-fat dairy products that jibed with the Mediterranean diet, but they were discouraged from using olive oil for cooking and from consuming nuts.

As expected, the results showed that either of the experimental Mediterranean diet options led to significantly better cardiovascular outcomes. But when the scientists tested cognition in a subset of study members, they also discovered that individuals in either of the Mediterranean diet groups performed better than the weight-instruction group in a battery of widely accepted cognitive tests. “This is surprising, of course,” Martínez González says.

As intriguing as these findings are, they are still not conclusive; the researchers had not gathered any cognitive information at the beginning of the study. Therefore, the possibility remains that there was something different between the two experimental groups and the control group—beyond their diet interventions—that could account for the findings.

Martínez González sought to quiet such criticisms with a new study his team published in July in *JAMA Internal Medicine*. Drawing from a group of more than 300 participants who were also part of PREDIMED but at a specific site with more financial resources, the researchers conducted baseline cognitive measurements and compared them with that same group’s results four years later. On average, people were 67 years old at the start of the study. The newest findings, Martínez González says, are consistent with what he found in his earlier studies. These results are also not definitive, however, because this substudy was relatively small. Yet, he notes, it is the first time scientists have seen improvements in cognitive function from a randomized trial of the Mediterranean diet.

Can Americans, whose standard diet and way of life are often substantially different from that of adults living in Spain, benefit from the approach? That remains to be seen. The normal diet of the people in the study’s control group was still closer to a Mediterranean diet than that of most Americans, so they already had years of relatively healthy eating under their belts, which could have helped their overall health. But Martínez González believes that the diet might provide even greater benefits for Americans because they have so much more room for improvement. Still, nutrition expert Martha Morris of Rush University says, only a randomized trial in the U.S. can truly answer the question—something she hopes to spearhead in the coming years.

BEYOND DIET

PROVING THAT A PARTICULAR CUISINE affects cognitive health is one thing. Getting a lot of Americans to eat more fruits, vegetables, fish and olive oil is another matter altogether. Two major obstacles are cost and ingrained habits. For PREDIMED, study participants were supplied with expensive extra virgin olive oil and told how to prepare meals. “To transfer this knowledge to the American population, you can’t just show them food items,” Martínez González says. “You have to show them how to shop for them, cook with them and prepare them to keep all the nutrients in line with the traditional Mediterranean diet.” The first step in the right direction, he says, would be for Americans to slash their consumption of red meats and use poultry instead. But that still leaves a lot of other steps to go before they are eating a Mediterranean diet.

Adhering to the exact diet laid out in PREDIMED may not be the only way to gain cognitive benefits from food. In February, Morris and her colleagues published online a study recommending a modified diet largely consistent with the Mediterranean diet but one cheaper to adopt in the U.S. Morris’s so-called MIND diet emphasizes green, leafy plant and whole grain consumption. Its staples include two veggie servings a day, two berry servings a week and, instead of the almost daily fish consumption required in the Mediterranean diet, fish only once a week.

Morris found that even moderate adherence to the MIND diet for an average of 4.5 years appeared to reduce Alzheimer’s risk compared with the Mediterranean and another diet. She and her colleagues judged that outcome by counting the number of cases of clinically diagnosed Alzheimer’s among each group during the study period. (The comparison diets required stricter adherence to get the same cognitive benefit.) Better yet, the MIND diet may be more achievable for the average person’s wallet and for American culture. In the bigger picture, this finding suggests that “people improving their diet can make a difference for their memory,” says Francine Grodstein, a professor focusing on healthy aging at Brigham and Women’s Hospital in Boston and Harvard Medical School, who was not involved with the work.

Why certain food choices might help the brain function better remains unclear. Perhaps these regimens’ known cardiovascular benefits, which promote a good flow of blood and oxygen to the brain, are key. But other factors may be at work. Of course, questions about when these dietary changes need to happen or how diet stacks up against other factors, such as physical activity, sleep patterns and genetics also remain unanswered.

Recently some researchers have begun broadening their focus beyond food alone. In the European Union, a multicountry randomized trial beginning this year is designed to provide further insights into how diet, exercise and better control of blood pressure could work together to promote brain health. (Hypertension is a leading cause of stroke, which can seriously harm mental processing.) Although the study will not allow scientists to pinpoint which factor offers the greatest benefit, it should give them a better understanding of how significant a role life changes can play.

There is reason to be hopeful. A pilot study published in June in the *Lancet* found that making changes in diet and habits later in life can slow the course of cognitive decline. Scandinavian researchers divided a group of 1,260 people in Finland either to receive standard nutrition and diet advice or to follow a specified exercise plan and eat a modified Mediterranean diet—all while their blood pressure and other health indicators were monitored and, if necessary, treated. Subjects in the experimental group ended up doing significantly better on standard tests of cognition. “We could really see that [the intervention] can protect against or at least delay cognitive impairments,” says lead study author Miia Kivipelto, director of research and education at the geriatric clinic at the Karolinska Institute in Stockholm. Unexpectedly, she says, those changes were visible within just two years. And best of all, superpowers are not required. ■

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