

The Brain: Preventing An Organic Hard-Drive Crash

One of the most annoying experiences is when you are on the verge of remembering something, but it just barely escapes you. That name that's on the tip of your tongue, or that word for that little dangly thing in the back of your mouth that someone just told you what it was called but you can't remember exactly what it was, but it definitely had an "L" in it, or maybe an "E".

I'm sure the globally unifying human experience across all time and space is that of the older parent that cannot remember what name belongs to which child, and may even confuse the names of family pets with those of family members and vice versa. For example, my mother-in-law's mother, when she was alive, had seven children and she would just call out names until she got the right one.

Most of us experience the gradual dimming of our mental abilities to various degrees as we age, and in some cases develop dementia, Alzheimer's and other brain and nervous system diseases and disorders. One of the great questions of modern medicine is: can something be done about it?

Thanks to ongoing research and development in this field, particularly in the 1990's which some refer to as the "decade of the brain" to due the enormous number of advances and discoveries in brain anatomy and function, we now have some very effective tools in preventing: age-related decay in cognitive functions, nervous system disorders originating in the brain like Parkinson's, Huntington's, and Lou Gehrig's

disease, and even improving existing mental functions or returning them to normal levels.

I like to start at the beginnings of stories, but in this case we can go even further back, before birth: pregnancy. Numerous studies have confirmed that long-lasting brain health and optimum function begin in the developmental stages of the fetus in the womb. One substance that has been shown to be a primary factor in the proper development of fetal brains is Choline, an essential amino acid, often classified as a B-vitamin.

Scientists at the Duke University Medical Center conducted an experiment on pregnant rodents. They were divided into three groups: one fed normal amounts of choline, extra choline and no choline. The offspring whose mothers were fed the additional choline had vastly superior brains. They displayed better memory and learning capabilities. The neurons in their brains memory processing centers responded instantly to the tiniest electrical probe, indicating their brains were primed for learning. Even more incredible was that even as the extra-choline offspring entered old age, their brain functions remained efficient. They made half as many errors when searching through mazes as the offspring whose mothers were fed the normal amounts of choline. The no-choline offspring, however, had sluggish brains and impaired memory when they grew up.

It is absolutely incredible that a single nutrient, choline, enabled nature to produce a brain of extraordinary quality. But what about those of us who mothers didn't take additional prenatal choline? Are we trapped with an inferior brain, fatefully doomed to

dementia or nervous system disorders? The answer is that even if you have diminished brain function, or are just beginning to show signs of mental degradation, there is something that can be done about it.

Interestingly, in many of the studies done on various nutrients that positively affect brain function, those who had impaired or poor function experienced that greatest gains, while those whose brain function were within more normal ranges experienced only minor gains if any, possibly indicating that there is an optimum state of operation for the brain and that there most likely is no “magic pill” that will give you a “super brain” but it does inspire confidence that one can more often than not restore a diminished brain back to good original working order.

For example, one of the most scientifically promising memory enhancers is a fatty nutrient with the overly complicated name of Phosphatidylserine (fos'fuh tid'ill ser een) more commonly referred to as PS. PS is present in all cell membranes, but most concentrated in the brain. Researcher in a collaborative study between Vanderbilt University School of Medicine and Stanford university, 149 people between the ages of fifty and seventy-five were separated into two groups. One was given 100 milligrams of PS three times a day with meals, and the other group was a placebo control. During the twelve weeks of the study, all the subjects took a battery of neuropsychological tests every three weeks.

By the end of the study it was clear that PS was unique. Those taking PS were scoring 30 percent better on

tests of memory and learning. PS takers with the worst memory deficits benefited the most. They were better at remembering faces, phone numbers, names, and they had improved concentration. The investigator concluded that PS “rolled back the clock” on age-related memory impairment by twelve years. If a subject's cognitive age for remembering numbers was sixty-two, PS reversed it to fifty, a one year roll back for each week of the study. Also, the gains persisted for one month after the subjects stopped taking PS.

While this may not seem spectacular improvement, say on the order of turning a person from the cognitive age of seventy-five to twenty-five, you have to remember that this is the first compound ever discovered that can not only delay age-related memory loss, but actually reverse it. Nearly every study on PS since has confirmed and expanded upon the results of the Vanderbilt and Stanford study, including international research. The conclusion is that if you are over forty and believe you may be experiencing the early stages of age-related cognitive impairment, PS may be the solution.

While at this point it may sound like PS is the only way to “keep your marbles” once you get over the hill, but that is not the case. We have not yet talked about what “age-related” memory loss even means. Age is not a “thing” though many of us feel the affects of “age” or “time” every day, what we are actually experiencing is the accumulation of a number of complex chemical processes in the body. Dealing with the brain particularly, one of the main effects of “age” is the gradual impairment of individual brain cell function and efficiency due to

cellular damage caused by toxins and free radicals.

The part of the brain cell that is both the most vulnerable to free radical damage and the source of the cells energy is its mitochondria. This is a term you may be familiar with if you have read our previous newsletter on mitochondria: ***Mitochondria: Recharging Your Batteries***. Without restating the entire newsletter, mitochondria are the energy factories of the cells. They produce ATP, the cellular fuel that powers all cellular life in the body. Over time, free radical damage reduces and degrades the performance of these mitochondria in all cells, resulting in impaired cellular function and is one of the primary components of “aging”. In brain cells, mitochondrial impairment directly translates in cellular impairment, which then results in degrading cognitive function.

Escaping this cycle requires a multi-faceted approach. First, the presence and effects of free radicals has to be suppressed and eliminated so that no more damage is incurred by the mitochondria. Secondly, the damage that has occurred has to be repaired and new mitochondria, free from impairment, must be produced.

Incredibly, there is a nutrient that does both. Coenzyme Q10 (CoQ10) is a powerful antioxidant that neutralizes free radicals and also resuscitates other antioxidants to join the fight, such as vitamin E. CoQ10 also serves as a “spark” to ignite the mitochondria into producing ATP with great speed and efficiency, restoring cellular function in impaired brain cells. There is even strong evidence that coQ10 may be effective in combating various degenerative brain diseases like

Alzheimer’s, Parkinson’s, and Huntington’s.

An interesting note is that coQ10 is naturally present in high levels in the brain during youth, but gets used faster than its gets replenished and, thus, also contributes to the cycle of cognitive impairment. Therefore, coQ10 very likely is the missing link to preventing “brain aging” all together!

The three important nutrients to cover all the bases of degenerating cognitive ability are: choline, phosphatidylserine (PS), and coQ10. Obviously, there are other important nutrients that can provide enormous benefit for ones health, even the health of your brain, but these three stand out in particular for their demonstrated and proven effectiveness in preventing, protecting, and even restoring the brain back to its optimum levels.



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