Anybody that has traveled by airplane on multiple occasions has likely experienced an exceptionally long line at the security checkpoint. These lines can be frustrating, but we tolerate the inconvenience because we know it is a necessary process to maintain safety and security. Take a moment to consider the fact that your brain actually has its own biological security screening. Your brain restricts the types of chemical compounds that are able to move from your blood stream into your brain to help protect it.

The brain’s security system is referred to as the “blood-brain barrier” (BBB), and it is vital to life. The BBB ensures that your brain receives the nutrients it needs while maintaining protection from harmful chemicals, metabolic waste products, and even infectious microorganisms. The BBB is formed by the small capillary blood vessels that are woven throughout the brain. The cells that make up these capillaries are held closely together forming tight junctions that make it difficult for large molecules to pass through. They also contain a wide variety of proteins that function as pumps and filters to allow some compounds to pass and others to remain in the blood and out of the brain.

As we age, oxidative damage, inflammation, stress and some medical conditions including diabetes can cause capillaries to “leak” allowing inappropriate molecules to cross the BBB, resulting in damage to brain cells. Leaking capillaries are similar to an airport security line that allows people to freely pass through the line without being screened.

When inappropriate molecules freely enter the brain, they can begin causing damage to brain cells and neuronal connections, accelerating the aging process and contributing to neurological conditions like cognitive decline, mood disorders, memory problems, and even dementia and Alzheimer’s disease. A person with diabetes may be at increased risk.
for these conditions as a result of the effects of high blood sugars and oxidative stress that weakens the defenses of the BBB.4

**Diabetes and Brain Health**

Impaired glucose tolerance has been linked to cognitive decline in both Type-1 and Type-2 diabetes.3 Diabetes is associated with 2-fold increased risk of dementia and also increased rate of cognitive decline when compared to people without diabetes.5 There can be additional risk of neurological problems due to other medical conditions that typically occur in people diagnosed with Type-2 diabetes like high blood pressure, obesity, and cholesterol problems.5,6

Cognitive decline is of special concern in people with diabetes because they may lose the ability to self-manage their diabetes. Decreasing cognitive function makes it more difficult to follow a complicated medication regimen, administer insulin injections, and perform routine self-monitoring.5 People with cognitive decline and diabetes are more likely to experience potentially life-threatening episodes of low blood sugar, called hypoglycemia.5

People with diabetes are also at increased risk of developing mood disorders, with as many as 31% exhibiting depressive symptoms.5 It is unclear if these symptoms are related to coping with the diabetes diagnosis or actual altered neurotransmitter function due to biochemical processes related to diabetes and an impaired BBB.5

**Increasing Security**

Remember that when the BBB is properly functioning it only allows some chemical compounds to pass through, including the nutrients that might be included in a nutritional supplement. There are a number of chemical properties that a compound might have that helps the BBB decide if it can or cannot pass.1,7

One of these important factors is the physical size of the molecule. Small molecules are more likely to cross into the brain than larger molecules, much like individual bricks are easier to transport than a completed house. You can think of this as your body’s way of providing the brain with the raw materials it needs to make all of the essential components for a healthy brain. McCord Supplements Nutritional Supplements utilize molecules that are capable of either crossing the BBB or stimulating the natural production of other compounds that help protect the brain.

There are several nutrients and antioxidants that have been shown to help protect brain cells and the capillaries that make up the BBB. This includes potent antioxidants found in olives (hydroxytyrosol), grapes (trans-resveratrol), green tea (ECG/EGCG), turmeric (curcumin), and broccoli (sulforaphane) plus nutrients like B vitamins, methylsulfonylmethane (MSM), L-taurine, N-acetyl-l-cysteine and magnesium.1,4,7–15 The Mediterranean diet and other diets that are high in these nutrients are associated with a lower risk of cognitive decline, dementia and progression of mild cognitive disorders into Alzheimer’s disease.5,16

McCord Supplements Nutritional Supplements can help to boost the amounts of these beneficial compounds in your diet, giving your body the tools it needs to help maintain your brain’s natural security system - the blood-brain barrier.
References


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About the author: Kyle Hilsabeck, PharmD, is the Vice President of Pharmaceutical Affairs at McCord Holdings and licensed by the Iowa Board of Pharmacy. He completed bachelors degrees in biology and biochemistry at Wartburg College before earning his Doctorate of Pharmacy from the University of Iowa College of Pharmacy. Upon graduation, he completed a community pharmacy practice residency through the University of Iowa where he focused primarily on nutritional aspects of care including the use of vitamin, mineral, and herbal supplements. He has taught courses for the University of Iowa College of Pharmacy on vitamins, minerals, herbs, and nutritional supplements and given many presentations on the subject as well. He has a passion for improving patient care specifically with regards to the safety and quality of the nutritional supplements and health information people use.

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