

# ***Red Blood Cells and Chronic Fatigue Syndrome***



By Jule Klotter (Townsend Letter, issue: November 2001)

According to an article by Maryann Spurgin, Ph.D., New Zealand researcher Dr. L.O. Simpson has theorized that myalgic encephalomyelitis (ME), also known as Chronic Fatigue Immune Deficiency Syndrome (CFIDS), results from

"insufficient oxygen availability  
due to impaired capillary blood flow."

Simpson attributes the impaired capillary blood flow to smaller-than-usual capillaries and to the presence of abnormal red blood cells (nondiscocytes).

In healthy people, most red blood cells are smooth-surfaced and concave-shaped with a donut-like appearance. These discocytes have extra membranes in the concave area that give them the flexibility needed to move through capillary beds, delivering oxygen, nutrients, and chemical messengers to tissue and removing metabolic waste, such as carbon dioxide and lactic acid.

Abnormal red blood cells lack flexibility that allow them to enter tiny capillaries. These nondiscocytes are characterized by a variety of irregularities, including surface bumps or ridges, a cup or basin shape, and altered margins instead of the round shape found in discocytes.

When people become ill or physically stressed, a higher percentage of discocytes transform into the less flexible nondiscocytes. Simpson says that the blood samples of marathon runners show a higher percentage of cup-shaped nondiscocytes (somatocytes) after a race. This higher percentage soon reverts to pre-race, normally-low levels of abnormally-shaped cells. Similarly, researchers found that the percentage of nondiscocytes in people with a viral head cold peaked on the fifth day and declined by the tenth day.

Simpson found that people with ME/CFIDS have higher percentages of nondiscocytes than people with other chronic illnesses, such as Lupus, multiple sclerosis, Huntington's disease, malaria, and diabetes. In addition, the percentages of cup-shaped somatocytes in ME/CFIDS patients can remain high for months, inhibiting blood flow.

Simpson believes that, in ME/CFIDS, either the mechanism whereby red blood cells revert to the discocyte form is hampered for some reason or that whatever triggered the red blood cells to transform into nondiscocytes remains in effect, albeit unidentified. Ms. Spurgin notes that red blood cell morphology is also affected by toxic chemicals, providing a possible link between ME/CFIDS, environmental illness and multiple chemical sensitivity, and Gulf War Syndrome.

Simpson found that vitamin B12 injections reduced nondiscocyte levels in some ME patients. These patients also experienced symptomatic improvement. Patients whose nondiscocyte levels remain unaffected by the B12 injections noticed no improvement. Research with diabetic patients found that omega-3 fatty acids can also reduce nondiscocyte levels and improve capillary flow; and omega-6, in the form of evening primrose oil, has improved blood filterability in cigarette smokers.

"The Role of Red Blood Cell Morphology in the Pathogenesis of ME/CFIDS" by Maryann Spurgin, Ph.D., The CFIDS Chronicle, Summer 1995 discocytes have extra membranes in the concave area that give them the flexibility needed to move through capillary, beds, delivering oxygen, nutrients, and chemical messengers to tissue and removing metabolic waste, such as carbon dioxide and lactic acid. Abnormal red blood cells lack flexibility that allow them to enter tiny capillaries. These nondiscocytes are characterized by a variety of irregularities, including surface bumps or ridges, a cup or basin shape, and altered margins instead of the round shape found in discocytes.

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