



NEW  
BEGINNINGS  
UNLIMITED  
POSSIBILITIES

# CAP-e Testing on NuVerus Botanical™

NIS Labs, a Natural Products Research Laboratory, specializes in cell-based testing and clinical pilot studies. NIS Labs began developing the CAP-e assay for testing the bioavailability of antioxidants at the cellular level in order to provide a more accessible test to the Natural Products Industry.

The CAP-e assay (Cell-based Antioxidant Protection in Erythrocytes) is a new method for evaluating the antioxidant potential of natural products based on the concept that many such antioxidant products are only of biological relevance **if they are able to protect living cells**. In other words, it is a cell-based assay for the evaluation of whether antioxidants in natural products are capable of protecting live cells from oxidative damage. The test is designed to measure the antioxidant bioavailability of a product at a cellular level.

The CAP-e antioxidant protection test is the new industry standard specifically developed to investigate how bioavailable the antioxidants are to the cells. This cell-based testing has emerged as a new technology to assess the complex biologic protective mechanisms in the cells. **Put simply, the test can tell what is going on inside the cells of our bodies after consuming the supplement.** Most products that use antioxidants as a marketing claim today have used 'chemical based' methods to base their claims (ORAC Testing). With the introduction of the CAP-e, "cell-based testing" it is now possible to go to the next level of testing.

The CAP-e assay is performed by allowing red blood cells to absorb antioxidants from a physiological liquid containing soluble product. All compounds not absorbed into the cell are then removed. The cell is exposed to oxidative stress. An indicator dye shows the degree of intracellular damage to the cell, in the presence versus absence of serial dilutions of the test product. The CAP-e test uses erythrocyte cells. "Erythrocyte" means "red blood cell". This type of cell is the most abundant in our blood stream. In a healthy person there are more than 100 times more red blood cells than white blood cells. The red blood cells are best known as transporters of oxygen through our body. However, we are beginning to understand the enormity of other roles these cells play. Whereas the white blood cells provide protection from invading pathogens by immune defense mechanisms, the red blood cells support the life and health of the white blood cells. Of importance to the antioxidant discussion, the red blood cells help to protect the vasculature, tissue, and the other cells in the blood stream from oxidative damage.

NuVerus is one of the only companies using both the ORAC Testing and the CAP-e testing on our flagship product NuVerus Botanical.

**The CAP-e test results for NuVerus Botanical were one of the highest ever in the history of CAP-e testing on Natural Products**

Jan 20, 2011  
Report from NIS Labs

Report #: 77-56-05  
Product: NuVerus Botanical™  
Lot/Batch #: F8



## Test Results

CAP-e units (uM GA/mL Test)	48
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\* The CAP-e value is in Gallic Acid Equivalent (GAE) units. This measurement reflects the relative antioxidant protection of cells by the test product per weight, compared to the known antioxidant, Gallic Acid.