

PRO-HEAL® SERUM ADVANCE+®
ORAC STUDY

AND

PRO-HEAL® SERUM ADVANCE+®
CELLULAR ANTIOXIDANT ASSAY

PRO-HEAL® SERUM ADVANCE+® ORAC STUDY

STUDY OBJECTIVE

The comparative antioxidant strength of PRO-HEAL SERUM ADVANCE+® was evaluated against other products on the market.

STUDY DESIGN

Many products are advertised as having antioxidant ability and protection against free radical damage. This study provided an actual comparison of five products in the marketplace using the same chemical assay.

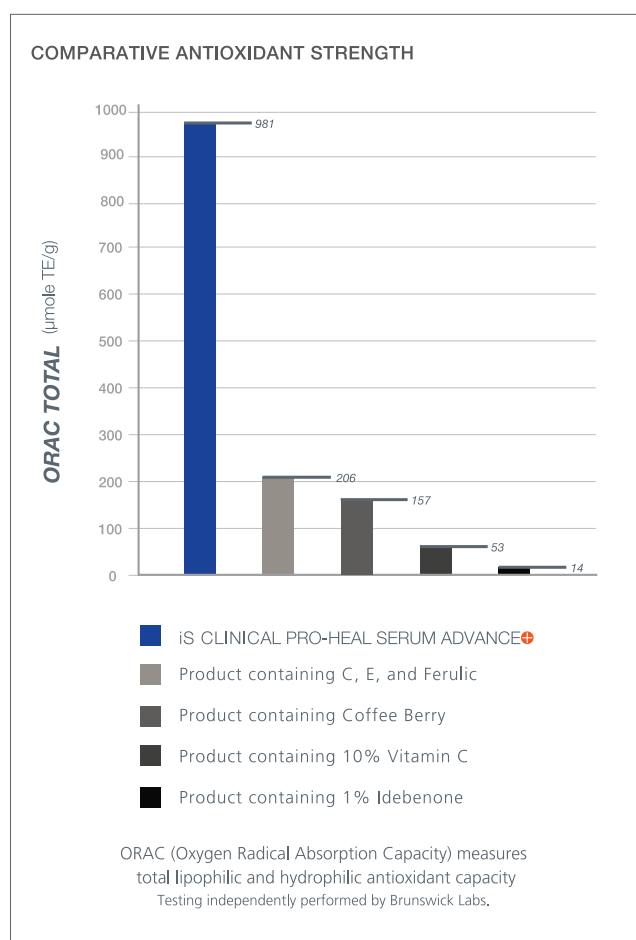
The ORAC analysis provides a measure of the scavenging capacity of antioxidants against the reactive oxygen species (ROS) found in the body. ORACHydro reflects water-soluble antioxidant capacity and the ORAClipo is the lipid soluble antioxidant capacity. ORAC TOTAL is the sum of the ORACHydro and the ORAClipo. Trolox, a water-soluble vitamin E analog, is used as a calibration standard and the ORAC result is expressed as micromole Trolox equivalent (TE) per gram or per liter.

SIGNIFICANCE OF STUDY

The ORAC assay is advantageous over many other methods. The mechanism of the ORAC is based upon sound chemical principles and the uniqueness of the ORAC lies in the quantitation technique. Indeed, many other methods have been developed for antioxidant activity, such as TEAC (Trolox Equivalent Antioxidant Capacity), TOSC (Total Oxyradical Scavenging Capacity), FRAP (Ferric Reducing Antioxidant Power), and DPPH method. However, the fatal drawback of these methods is either lack of oxygen radical or lack of complete quantitation technique. Therefore, only the ORAC provides antioxidant activity mechanistically and physiologically.

RESULTS AND CONCLUSIONS

PRO-HEAL SERUM ADVANCE+® provided superior antioxidant protection when compared to 4 other products in the marketplace, with a total ORAC of 981.



PRO-HEAL® SERUM ADVANCE+® CELLULAR ANTIOXIDANT ASSAY

STUDY OBJECTIVE

PRO-HEAL SERUM ADVANCE+® exhibits high ability to neutralize free radicals as shown in the ORAC (Oxygen Radical Absorptive Capacity) assay. This Cellular Antioxidant Assay (CAA) demonstrates that PRO-HEAL SERUM ADVANCE+® not only efficiently neutralizes free radicals as an end-product but also is absorbed into human cells and serves as an impressive antioxidant within the intracellular environment.

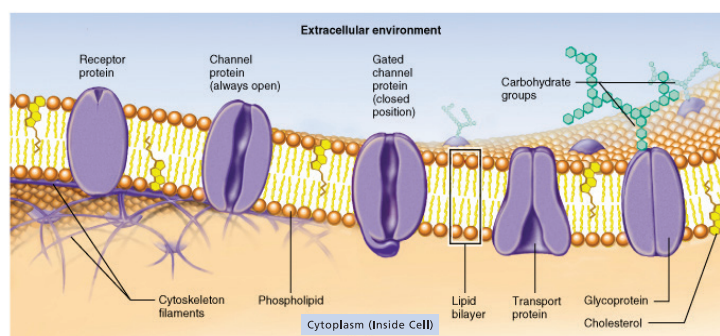
STUDY DESIGN

The Cellular Antioxidant Assay measures a product's ability to neutralize free radicals within the human cell environment. In this evaluation, a fluorescent probe is placed inside human liver cells in monoculture. This probe loses fluorescence with damage from oxygen radicals. Measurements of fluorescence indicate the amount of free radical damage occurring intracellularly. The test product is placed outside of the cells in the extracellular environment where its delivery mechanisms are responsible for transport into the cells. After washing, a source of oxygen radicals is provided which permeates cell membranes and damages the intracellular probe unless antioxidant material inside the cells prevents this damage. The intracellular antioxidant ability of the substance is measured by assessing the preservation of the probe in Quercetin equivalency units per volume.

SIGNIFICANCE OF STUDY

The Cellular Antioxidant Assay measures the ability of a substance to neutralize oxidation damage within human cells. Since the material is initially placed on the exterior of these cells, it also demonstrates that the end-product moves across the cell membrane and is absorbed into the cell's internal environment where it is incorporated into intracellular metabolism as an antioxidant. This method serves as a preclinical demonstration of bioavailability. It describes the ability of the substance to be absorbed by human cells and its antioxidant effectiveness within these cells. Thus, the CAA supports the free radical scavenging

abilities of a product within the human cell environment and carries the scientific support given by the ORAC test (Oxygen Radical Absorptive Capacity) through an additional arena of effectiveness.



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The cell membrane is a complex organelle, making it difficult to create skincare products that will effectively penetrate it.

CAA proves that PRO-HEAL SERUM ADVANCE+® moves inside human cells where it serves as an effective antioxidant within the intracellular environment, protecting vital cellular organelles and metabolic systems.

RESULTS AND CONCLUSIONS

The Cellular Antioxidant Assay for PRO-HEAL SERUM ADVANCE+® measures 1467 umole QE/ml. This result is important for several reasons: 1) The raw value indicates a high ability to absorb and neutralize free radicals. 2) The characteristic of free radical absorption was demonstrated from within the human intracellular environment, indicating an effective delivery mechanism into the interior of the cell and through the cell membrane. 3) This value shows an impressive ability to neutralize oxygen radicals from this intracellular location. 4) PRO-HEAL SERUM ADVANCE+® must remain stable during transport in order to achieve this measurement.

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