

Abstract

Fluorescein is a highly fluorescent molecule that can be used to gauge the antioxidant capacity of extracts. As the compound is oxidized by peroxy radicals it loses its fluorescent ability. When fluorescein is combined with 2,2'-azobis(2-amidinopropane)dihydrochloride (AAPH), a compound that decomposes into a peroxy radical, there will be a time dependent loss of fluorescence. The addition of compounds that exhibit antioxidant properties will slow the loss in fluorescence as the peroxy radicals react with the antioxidants instead of the fluorescein.

Materials and Methods

Stock solutions of **ACB Bamboo Isoflavones PF** and Trolox (positive control) were prepared in appropriate buffers (10 mM phosphate buffer (pH 7.4)). Materials were prepared at two different concentrations. Trolox was used as a reference for antioxidant capacity and prepared at a concentrations ranging from 12.5 μM to 200 μM in 10 mM phosphate buffer. For the ORAC assay, 25 μl of test material and Trolox were combined with 150 μl of 10 nM fluorescein in 10 mM phosphate buffer and incubated in the dark at 37°C for 30 minutes. At the end of the incubation period, two initial fluorescence measurements were made of each well (excitation 485 nm, emission 520 nm) using a fluorometer. After, 25 μl of AAPH (240 nM in 10 mM phosphate buffer) were injected into each well. Fluorescent measurements were then taken every 2 minutes for approximately 2 hours.

The oxygen radical absorbance capacity (ORAC) for each material was calculated using the following equation:

$$(\text{Sum of fluorescent measurements}_{\text{test materials}}) - (\text{Sum of fluorescent measurements}_{\text{test material vehicle}})$$

ORAC measurements for the test material were expressed in micro moles of Trolox equivalents (μMTE). To determine this calculation, the ORAC values for the test materials were converted to Trolox equivalents using regression analysis. The study was run in triplicate, findings were reported in mean values.

Results

ORAC Assay

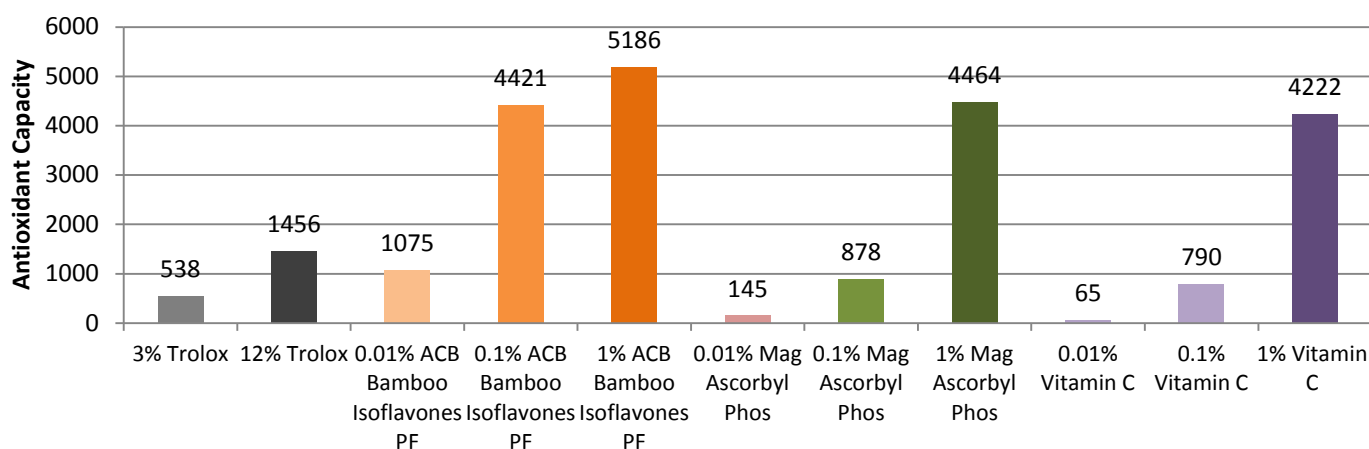


Figure 1. Antioxidant Capacity Results

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ACB Bamboo Isoflavones PF ORAC Assay

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Discussion

As shown in figure 1, **ACB Bamboo Isoflavones PF** exhibited higher antioxidant activity than Trolox, Vitamin C and Magnesium Ascorbyl Phosphate. These 3 substances are very well known antioxidants that are typically added into cosmetics. The antioxidant capacity of **ACB Bamboo Isoflavones PF** increased as the concentration increased, as a result we can assure that its ability to minimize oxidative stress is dose dependant.

ACB Bamboo Isoflavones PF was designed to provide enhanced slip properties, however with the present study we can confirm that this unique ingredient is not only capable of providing functional benefits but it is also capable of providing potent antioxidant benefits when added to cosmetic applications. This product is an excellent alternative to any of the previously mentioned common antioxidants were superior antioxidant benefits are desired.

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