Effects of Brewing Conditions on the Antioxidant Capacity of Artemisia tridentata

Shortman, Tyneeshia (School: South Sevier High School)

The purpose of this research was to determine how the brewing temperature affected the antioxidant levels of sagebrush tea . As an American Indian, sagebrush is important in my culture for a variety of purposes like ceremonies, prayers, smudging, and medicine. Antioxidants, a substance known to prevent damage to cells within the body, is found in sagebrush. Sagebrush leaves were brewed in distilled water on low, medium and high temperatures for 15 minutes. Serial dilutions were created for each temperature sample which were then deposited on nanocerac sensors. The sensors were color scanned and then the blue index color was measured and record for each dilution. The averages for each dilution was calculated, plotted, and then compared to a known antioxidant calibration curve, gallic acid. Although the medium temperature brewing conditions maxed at 62.7 ? and the low temperature conditions maxed at 31?, with a separation of 31.7?, the antioxidant levels were nearly the same. In contrast, the high temperature brewing conditions maxed out at 95.7?, with a separation of 33? from the medium temperature tea but the difference between the levels of antioxidants were significant. The antioxidant levels for the high temperature brewed sagebrush leaves was significantly higher than the low and medium temperature brewed leaves. This is consistent with what my original hypothesis was, that higher brewing temperatures would have higher antioxidant levels. This data is applicable for many reasons especially since sagebrush tea is used by many cultures for its healing properties. The temperature at which the tea is brewed is clearly important.

Awards Won: