Effects of Brewing Temperatures on the Antioxidant Capacity of Common Native Herbal Plants: Thelesperma megapotamicum and Pectis angustifolia

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Native Americans use Navajo tea and lemonscent native herbs for a variety of purposes like ceremonies, prayers, smudging, and medicine. The purpose of this project was to determine the antioxidant levels of these plants by comparing them to a known antioxidant, gallic acid. Native herbal plants were dried, and brewed in distilled water at low, medium and high temperatures. Each sample was then applied to a nanoceric sensor and then scanned and observed using a digital color meter. The levels were then compared. Although the medium temperature brewing conditions maxed at 53.8 for Navajo tea and 56.2 for lemonscent, and the low temperature conditions maxed at 26.2 for Navajo tea and 28.4 for lemonscent, with a separation of 27.6 for Navajo tea and 27.8 for lemonscent, the antioxidant levels were nearly the same for Navajo tea. In contrast, the high temperature brewing conditions maxed out at 96.0 for Navajo tea and 95.2 for lemonscent, with a separation of 42.2 for Navajo tea and 39 from lemonscent, from the medium temperature tea but the difference between the levels of antioxidants were significant. Navajo tea had significantly higher antioxidant levels, especially at the higher brewing temperature. The data did not support my original hypothesis that the lemonscent high-brewing temperature would have higher levels of antioxidants than the Navajo tea and Sagebrush because of the tiny flowers. This data is applicable for many reasons especially since Navajo tea is used by many cultures for its healing properties. The temperature at which the tea is brewed is clearly important.

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