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Amina Sadik
Touro University Nevada, amina.sadik@touro.edu

Theodore Chang
Touro University Nevada

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Amina Sadik, MS., Ph.D., MSMEL and Theodore Chang, OMSIII, Touro University Nevada College of Osteopathic Medicine, Henderson, NV

In comparing the effect of Maté to that of green tea, it has been shown that Maté has higher anti-oxidative properties. We have shown that the extract of Yerba Maté, *paraguariensis,* leaves does indeed have strong anti-oxidative properties through the evaluation of its scavenging activity and its ability of assist cardiomyocytes in their recovery from induced oxidative stress using both spectroscopy, a colorimetric assay and flow cytometry. In order to elucidate the mechanism behind this action, we quantified the enzymes known to be expressed naturally by cells under oxidative stress such as glutathione peroxidase, superoxide dismutase, and catalase. These enzymes were conjugated to antibodies and stains detectable via flow cytometry. Their expression was evaluated in presence and absence of oxidative stress. The obtained results indicated that Maté does not increase the expression of the genes coding for these enzyme but instead acts as a free radical scavenger, decreasing the amount of reactive oxidative species in the cellular environment, thereby decreasing the need for enzymes usually involved in the recovery from antioxidative stress. All the enzymes quantified showed a decrease in their expression in a dose-dependent manner.

Upon discovering the inverse relationship of the activity of these enzymes to the concentration of Maté used to treat the cells, we concluded that Maté exerts it antioxidative capacity and therefore assists cardiomyocytes in their recovery from induced oxidative stress without or with very little involvement of the enzymes known to remove oxidative species from the cellular environment. These findings show that Maté is an effective antioxidant that prevents damage to the cardiovascular system.