Title – Potential Pro-Carcinogenic Suppression of Cytochrome P450 1A1 via the Açaí Berry

Program of Study –

Presentation Type – Print Poster

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Category – Basic

Abstract: Playing a leading role in detoxification by metabolizing drugs and other foreign compounds, the cytochrome P450 class of enzymes gets its name from its absorbance at 450 nm. Cytochrome P450 1A1 (CYP1A1), an enzyme belonging to the cytochrome 450 superfamily, is linked to the bioactivation of pro-carcinogens and the production of reactive metabolites, ultimately leading to carcinogenesis. The focus of this research project is to examine the effect of the açaí berry, a natural product promoted as a beneficial "antioxidant," on CYP1A1 activity. By exploring the interactions of various açaí berry extracts (*Euterpe oleracea)* on CYP1A1 activity, the origins of the proposed antioxidant properties of the açaí berry could be identified. For example, blocking the activation of pro-carcinogenic compounds by this human enzyme would have a beneficial health effect. A luminescent assay commercially developed to measure the expression of the CYP1A1 enzyme is used to assess inhibition. Using an activity-guided fractionation scheme, a single compound was identified with potent anti-CYP1A1 activity. This compound, diosmetin, inhibits the human CYP1A1, even at nanomolar concentrations, which

could be achieved through moderate consumption of açaí products. Further research will be done to assess other cytochrome P450s to see whether other enzymes in this superfamily are also strongly inhibited by diosmetin.

Christian worldview integration: As students who are dedicated to spreading the gospel to the nations, we strive to pursue Christ as we pursue research. Through our hours in the lab, devotion to our studies, and commitment to discovery, we seek to make a difference and be a light in every aspect of this journey. In our attempts to study and confirm the proposed antioxidant effects of the acai berry, we hope to use the discovered properties to make a difference in the health system. For example, our research has led to the conclusion that the antioxidant properties found in the acai berry may have the ability to block the activation of pro-carcinogenic compounds. Furthermore, this leads to the potential use of the acai berry within the health system to suppress carcinogenic effects in the body. The knowledge gained from and experience of researching the acai berry provide a platform to share the Gospel and glorify God. 1 Corinthians 10:31 states, "So, whether you eat or drink, or whatever you do, do all to the glory of God" (ESV). This verse commands the believer to glorify the Lord in all aspects and facets of his or her life. As researchers, we hold this command in high regard and seek to share and impact others with not only our scientific research but also with the Gospel and His love for them. We undertake these tasks with this at the forefront of our minds. In light of the countless hours of research and the many frustrations that exist therein, we remain encouraged, for we have been called by the Creator of the universe and seek to glorify him above all else.