

Title: Comparative Colorimetric Study on the Aqueous Extract of *Areca catechu* "Bunga" (Arecaceae) Fruit and Methanolic Extracts of *Bixa orellana* "Atsuete" (Bixaceae) Seed and *Hibiscus rosa-sinensis* Linn. "Gumamela" (Malvaceae) Flower as Red Colorants using UV-Vis Spectrometry

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Natural dyes are also used in the coloration of food, medicines and in leather processing. Unlike natural colorants, synthetic colors have been banned due to allergic and carcinogenic symptoms that they can cause. More eco-friendly dyes are now being developed to replace synthetic dyes which are found to be toxic and hazardous to health. Thus, the researchers wanted to study natural colorants from three botanical sources namely, Areca carechu, Bixa orellana and Hibiscus rosa-sinensis as possible alternative for the commercially used FD&C Red 40, Allura Red. UV-Vis Spectrometery was used to measure the transmittance of the samples within 380-770 nm at 10 nm interval. Using the transmittance values, CIELAB parameters were obtained and used to characterize and compare the colorants quantitatively. The results obtained in the present study revealed that the natural colorants from Areca catechu, Bixa orellana, and Hibiscus rosa-sinensis all fall within the dark, red and yellow spectra of colors based on the L*, a* and b* values respectively. Among the three natural colorants that were utilized in this study, both the natural colorants from A. catechu and B. orellana yielded p-values of 0.042 and 0.024 respectively. These are both lower than the level of significance at 0.05. This means that there is a significant difference between the aforementioned colorants to that of the standard. Thus it can be inferred that they can't be utilized as possible alternative colorant to Allura Red. Only H. rosa-sinensis yielded a p.value (0.641) that is greater than the level of significance. This means that there is no significant different between the two colorants across the combined color characteristics making it a possible alternative colorant to that of the standard in terms of color characterization alone. This means that among the three natural colorants, it can be implied that the natural colorant from H. rosa-sinensis is the closest to Allura Red in terms of combined color characteristics.

Biography

Ronnell John R. Gonzales has completed his college degree in Pharmacy at the age of 24 years from National University - Manila. He earned his license from the Board of Pharmacy in 2018. Currently, he holds the position of Junior Safety Data Analyst at a premier clinical research company under the pharmacovigilance department. He's a community pharmacist. He's also the founder of a non-profit charity organization which aims to extended helping hand to the less fortunate. He has co-written 2 papers both in the Pharmacy area of practice.

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Category: Oral presentation and/or Poster presentation