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Color comparison study on the methanolic and aqueous extracts of *Areca catechu* “Nganga” (Arecaceae) fruit, *Bixa orellana* “Atsuete” (Bixaceae) Seed and *Hibiscus rosa-sinensis* Linn. “Gumamela” (Malvaceae) flower as a red dye using UV-vis spectrophotometry

Ronnell John R Gonzales, Bianca Joyce F Famini, Mark Angelo F Eman, Maicheryll I De Castro, Adeline N Dañas, Dennice R Custodio and Cary U Cura
National University College of Allied Health, Philippines

Natural colorants are used in the coloration of food, handicraft items, toys, textiles and in leather processing. Many of the color-yielding plants are used as medicines in various traditional medicinal systems. Interest for natural colorants has increased dramatically worldwide due to the awareness of possible toxicity that can be caused by modern synthetic dyes. Synthetic colors have been banned in certain countries due to allergic and carcinogenic symptoms that they can cause. More eco-friendly colorants are now being developed to replace synthetic dyes which can be toxic and hazardous to health. Thus, the researchers wanted to study natural colorants from three botanical sources namely, *Areca catechu*, *Bixa orellana* and *Hibiscus rosa-sinensis* as possible alternative for the commercially used food, drug and cosmetic colorant, Allura Red. UV-Vis spectrometry was used to measure the transmittance of the samples which were used to obtain their CIELAB values and to compare the colorants quantitatively. Natural colorant from *Areca catechu*, *Bixa orellana* and *Hibiscus rosa-sinensis* mean L* values were 21.6097, 44.3664 and 19.0708, respectively; mean a* values were 89.2146, 65.3665 and 69.7741, respectively and mean b* values were 99.0016, 110.3789 and 21.6674, respectively. These results 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. Using one way analysis of variance (ANOVA), it was found out that 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 which means that there is a significant difference between the combined CIELAB values for color characterization of the natural colorants obtained from A. catechu and B. orellana to that of Allura Red. Thus it can be inferred that they can't be utilized and further studied as possible alternative colorants to Allura Red. Only *H. rosa-sinensis* yielded a p-value of 0.641 that is greater than the level of significance at a 0.05. This means that there is no significant difference between the combined CIELAB values for color characterization of the natural colorant obtained from *Hibiscus rosa-sinensis* to that of the standard, Allura Red making it a potential alternative. It can also be inferred through such data that among the three natural colorants that were analyzed in this study, the natural colorant from *H. rosa-sinensis* is the closest to Allura Red in term of combined color characteristics.

rongonzalespharma@gmail.com

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