

## **ABSTRACT**

*Differences in the calibration standards used for the determination of Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) by UV–Vis spectrophotometry often hinder direct comparison of quantitative results among studies. This study aimed to develop conversion equations among calibration standards for TPC and TFC analyses in order to enable accurate and standardized comparison of bioactive compound quantification. The conversion equations were established based on mathematical relationships among standards using linear regression derived from calibration curves of various reference compounds, including gallic acid, catechin, quercetin, rutin, apigenin, kaempferol, and myricetin for TPC, as well as quercetin, rutin, apigenin, kaempferol, and myricetin for TFC. The developed conversion models were applied to ethanol extracts of five Indonesian traditional medicinal plants, namely *Strobilanthes crispus* (kejibeling), *Elephantopus scaber* L. (tapak liman), *Gynura procumbens* (sambung nyawa), *Sauropus androgynus* (katuk), and *Anredera cordifolia* (binahong), and the converted values were compared with laboratory-determined TPC and TFC results. In addition, antioxidant activity was evaluated using the DPPH method, and correlation analyses between TPC, TFC, and antioxidant activity ( $IC_{50}$ ) were performed. The results showed that the inter-standard conversion equations were successfully obtained through linear regression analysis with high linearity ( $R^2 > 0.99$ ), allowing effective application for compounds within the same chemical class, but showing inconsistent performance across different compound classes. A moderately strong correlation was observed between TPC and TFC values and antioxidant activity ( $IC_{50}$ ). This study is expected to support the harmonization of phytochemical data, improve comparability of TPC and TFC results among studies, and strengthen efforts toward standardization of natural product analysis based on scientific evidence.*

**Keywords:** *total phenolic content, total flavonoid content, conversion equation, Antioxidant Activity, traditional medicinal plant*