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REINFORCING THE CORRELATION BETWEEN THE PRESENCE OF HIGH-ADDED VALUE COMPOUNDS WITH THE BIOACTIVE PROPERTIES OF TISANES USING A CATEGORICAL PRINCIPAL COMPONENT ANALYSIS

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The chemical composition and biological properties correlation in several medicinal and aromatic plants (MAPs) is still underexplored, especially in its most common form of consumption as tisane [1, 2]. A categorical principal component analysis (CATPCA) with optimal scaling was used to explore the combined relations between the phenolic compounds present in the five tisanes in study and their bioactive activities (antioxidant, cytotoxic, antimicrobial, antidiabetic, and anti-inflammatory). The number of plotted dimensions chosen allowed the meaningful interpretations of the results obtained, being the first two-dimensions the ones accounting for most of the total variance obtained (40.8% and 26.1%, respectively). The tisane composed by *Agastache foeniculum* (Pursh) Kuntze, *Mentha x piperita* L., and *Mentha spicata* L. was positively correlated with the family of TF (total flavonoids), ToC (total other compounds), and TPC (total phenolic compounds) meaning that this sample present the highest concentrations, while is negatively correlated with the Minimum inhibitory concentration values obtained for the bacterial strains *L. monocytogenes* and *E. faecalis* (presenting the lowest MIC values, and for that manner the highest antibacterial activity against this strains). TPA (total phenolic acids) is strongly correlated with the tisane composed by *Hypericum androsaemum* L., *Thymus x citriodorus* (Pers.) Schreb, *Cinnamomum zeylanicum* Blume, and *Syzygium aromaticum* L.; and moderately correlated with the tisane composed by *T. citriodorus*, *Thymus mastichina* L., *Lavandula angustifolia* Mill, and *Gomphrena globosa* L.; presenting this two samples negative correlations with the vast majority of the bioactive activities studied, which means lower IC₅₀, GI₅₀, and MIC values (higher bioactive potential). The results obtained by the CAPTCA, reinforce the correlation between the presence of phenolic compounds and the bioactivities presented by the tisanes, allowing the choice of the appropriate tisane depending on the intended biological activity. This knowledge could be applied in the pharmaceutical and food industry for the development of novel functional products.

References

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