

Metabolic profiles of Brazilian tropical wines determined by ^1H NMR spectroscopy and chemometrics

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Tropical wines are a new concept of vitiviniculture that is being developed principally in Brazil. This new Brazilian frontier is located at Northeast region in Pernambuco State, closed to the Equator line (between 8-9° latitude of the south hemisphere). Comparing these conditions with other Brazilian and worldwide vineyards, grapes present different characteristics, producing typical wines called “wines of sun”, presenting differences between them according to the month of production. In this region it is possible to harvest grapes all months in the year, and one vine produces two-three harvest by year, depending of the cycle of each cultivar, and grapevines are irrigated by drip. This characteristic is due to the singularity of the hot climate and soils of this region, being the second great producer region of fine wines of Brazil, after Rio Grande do Sul (South of Brazil). The region presents a climate with intra-annual variability, an annual average temperature of 26.4°C (21.0°C for minimum and 31.7°C for maximum temperatures), and it is located at 350 m above of sea level, in a flat landscape, with 500 mm of normal rainfall. The aim of this work is a preliminary study of Northeast Brazilian experimental wines, determining their chemical compounds and then metabolic profiles by ^1H NMR spectroscopy, associated to chemometric methods, to discriminate wine samples. ^1H NMR spectroscopy allows one to quantify, in a single analysis, the major sugars, organic and amino acids, alcohols and phenolic compounds of grapes and wines, allowing to obtain metabolic profiles in a complex mixture. Wine differences were found according to cultivars and vintages, and groups of samples were created, due to different chemical compositions.