PHYSICOCHEMICAL AND $^{13}$C CARBON ISOTOPE EVALUATION IN APPLE WINE AND COMMERCIAL CIDERS

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The consumption of Brazilian cider, a sparkling apple wine, is decreasing, due to low quality, and by competition with others sparkling beverages. The sensory characteristics of apple wine differ of ciders sold in Brazil. This study aimed to compare the physicochemical composition of apple wine made from different cultivars, with commercial ciders. Analysis of total phenols, total nitrogen, sugars, ethanol and $^{13}$C isotopic analysis were made, in four brands of Brazilian ciders (A, B, C and D) and apple wines made with Gala, Fuji and Granny Smith cultivars. The sugar content, in commercial ciders, ranged from 5.57 to 9.30 g/100mL, while the apple wine has a content lower than 0.1 g/100mL, probably by sugar adding, since the amounts of alcohol were similar (5.6 ± 0.6 °GL). The average of nitrogen content of brands A, B and C in commercial ciders (12.6 ± 4.9 mg/L) was below the 20-30 mg/L, which correspond to the fraction not assimilable, by yeast Saccharomyces cerevisiae, present in apple must. The ciders phenolic compounds of A and B brands (67.5 ± 26.6 µg/mL) were lower than values found for the wine made with three cultivars (253.1 µg/mL, on average), possibly due to must clarification step or by dilution with water. In isotope analysis, wines made only with apples, has a percentage of $^{13}$C of 110-118%, whereas, commercial ciders has 20-80%. Thus, both by $^{13}$C isotopic, as the physicochemical analysis, it is evident the addition of water in the beverage, that comprised from 20 to 80%.