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Volatile and maturation congeners in Cachaça aged in new, second-use and extensive fill barrels

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Achaça is a typical Brazil's sugarcane spirit. Aging process in wood barrels confers particular compounds to spirits that improves their chemical and sensory qualities. New barrels contain great potential for extraction of aromatic molecules (volatile acids and non-volatile, sugars, organic acids, triglycerides, tannins, terpenes, volatile phenols, lactonas, among others). Although, over time, the wood barrel reduces the extraction degree of these compounds and the aging process became less efficient. Furthermore, the chemical reactions become slower and the generation of aging markers congeners reduces. However, there are no studies that report the length of useful life of the barrels because many factors are involved in determining the quality of the barrel and the spirit. This study aims to compare the composition of Cachaças aged in first, reused and extensive fill oak barrels (Quercus petraea). The evaluation was carried out by chromatography analysis indicating quality and evolution of volatile and maturation congeners in Cachaça. Samples were withdrawn periodically and analyzed during 1 year. The volatile compounds monitored by GC-FID were acetaldehyde, ethyl acetate, methanol, propanol, isobutanol, 1-butanol, 2- butanol, isoamyl alcohol and acetic acid, and the maturation congeners analyzed by HPLC were vanillin, syringaldehyde, vanillic acid, sinapaldehyde, syringic acid, coniferaldehyde, furfural, 5 - hydroxymethylfurfural and gallic acid. Results showed that the number of filling barrel distinguished the aged spirits. First-fill barrels promoted 10% more volatile-congeners than refill barrels, which reported 15% more than extensive fill barrels. Acetic acid was 50% higher on first-fill. Refill and extensive use barrels showed similar volatile acidity concentrations. Isoamyl alcohol increases on reused barrels and first and extensive use showed similar results. Maturation congeners were 66% lower in refill barrels than first-fill and 94% lower in extensive use-barrels. These results may help to predict the aging time according to the degree of barrel using.

Biography

Aline M Bortoletto is currently a Post-Doctoral candidate at the College of Agriculture, Luiz de Queiroz of the University of São Paulo (USP), Brazil. She has done her Major in Food Science, Master's degree and PhD in Food Science and Technology from the University of São Paulo, Brazil. The main research area is chemical and sensorial quality of alcoholic beverages and spirits, with focus on *Cachaça* (Brazilian sugar cane spirit).

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