TOTAL PHENOLIC COMPOUNDS CONTRIBUTE TO THE ANTIOXIDANT CAPACITY OF BREW AND FOAM OF VARIED TYPES AND STYLES OF BEER CONSUMED IN BRAZIL

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The aim of the present study was to evaluate the contribution of phenolic compounds for the antioxidant capacity (AC) of beer brew and foam consumed in Brazil. Twenty-nine Brazilian beer samples of 12 different brands, from both lager (n=24) and ale (n=5) styles, were evaluated. Samples included pilsen (n=12), premium pilsen (n=4), alcohol-free (n=5) and wheat (n=2) beers, and were fractionated into beer without foam (BWF) and foam. Contents of total phenolics in beer and BWF were determined by the Folin-Ciocalteau method. The AC of beer, BWF and foam samples were determined by both FRAP and TEAC assays. Total phenolics were, on average, 305.7 and 267.9 mg GAE/L in beer and BWF, respectively. The AC of beer, BWF and foam were, on average, 2.59, 2.44 and 0.41 mmol Fe²⁺/L when FRAP assay was employed and 1.15, 1.27 and 0.22 mmol Trolox/L when TEAC assay was employed, respectively. The contents of phenolic compounds and the AC of ale and premium pilsen beers were consistently higher (p<0.05) than those of lager and pilsen beers, respectively. Such differences may be explained by differences between their fermentative process and/or formulation, such as in the malt and hops. In beer, BWF and foam, FRAP and TEAC values were strongly correlated (r>0.90, p<0.0001), suggesting that both assays were adequate for measuring beer AC. In both beer and BWF, contents of total phenolics were correlated with AC measured by FRAP (r>0.78, p<0.001) and TEAC (r>0.70, p<0.001), showing that these components are important contributors to beer AC.

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