



Antioxidant activity and price of beers sold in Brazil: Is there a relationship?

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Abstract

The beer, ingested in small quantities, can provide health benefits due to its composition. Thus, it is important to determine the antioxidant activity and the concentration of phenolic compounds of the main pilsen beers marketed in Brazil and to correlate these characteristics with the market price. A good relationship was found between the total phenolic content and the price of beers. However, it was not possible to conclude a direct correlation between the price and the antioxidant activity of the beers in the two methods used (FRAP and ABTS).

Key words: Beer, Phenolic Compound and Antioxidant Activity.

Introduction

Beer is one of the most consumed beverages today, because it has peculiar sensorial and nutritional aspects. Its intake, in small amounts, can provide health benefits due to its composition, which has phenolic compounds. These compounds are made from the raw material used and are responsible for the antioxidant capacity, the colloidal stability and the color, taste and aroma of the beer. These antioxidant agents have been gradually studied for beneficial health purposes, such as in the prevention of cardiovascular diseases and neurodegenerative diseases such as cancer and premature aging. Then adding bioactive value to the product and may influence its final price. In general, the cost of beer will depend on the quality of the raw material used, which will influence the antioxidant activity, the type of process adopted in the brewing, and its concentration, which makes it darker, increasing its final value. Thus, the present study aims to determine the antioxidant activity and the concentration of phenolic compounds of the main pilsen beers marketed in Brazil and to correlate these characteristics with the market price.

Results and Discussion

We used 19 varieties of beers with the price of 4 to 12 reais a liter. Samples were analyzed in duplicate.

The antioxidant activity of the beers was analyzed by the FRAP and ABTS methods and the total phenolic compounds by the method published by Singleton, Orthofer and Lamuela-Raventós (1999).

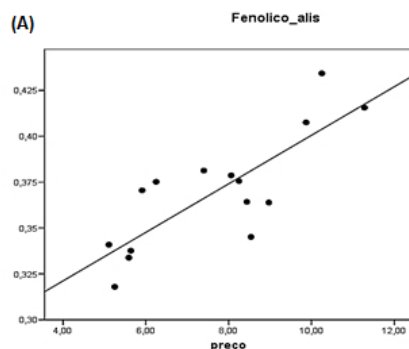


Figure 1. (A) Ratio of total phenolics to the price of beers; $R^2 = 0.65$ - linear model; $Y = 0.26 + 0.13x$.

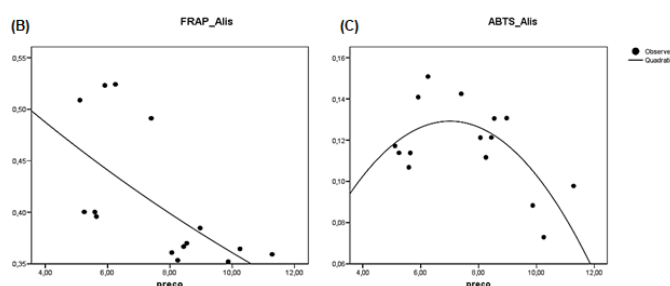


Figure 2. (B) Relation of antioxidant activity by the FRAP method with the price of beers; $R^2 = 0.42$ - exponential model; $Y = 0.59 - 0.05x$. (C) Relation of the antioxidant activity by the ABTS method with the price of beers; $R^2 = 0.46$ - Quadratic model, $Y = -0.16 + 0.04x - 0.003x^2$.

A good relationship was found between the total phenolic content and the price of beers. However, it was not possible to conclude a direct correlation between the price and the antioxidant activity of the beers in the two methods used (FRAP and ABTS).

In both analyzed parameters were found complex results, possibly associated to several factors such as the shelf life of the beers, the form of storage, additives of artificial antioxidants, the quality of the raw material used and brand value.

Conclusions

A good relationship was found between the total phenolic content and the price of beers. It was not possible to conclude a direct correlation between the price and the antioxidant activity of beers in both methods (FRAP and ABTS).

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