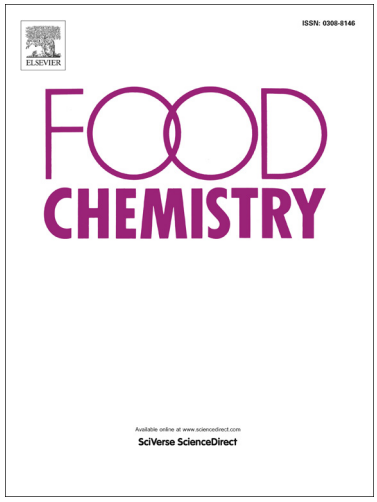

Short communication

Discrimination of Brazilian lager beer by ^{1}H NMR spectroscopy combined with chemometrics

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Discrimination of Brazilian lager beer by ^{1}H NMR spectroscopy combined with chemometrics

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Abstract

^{1}H NMR spectroscopy combined with chemometrics was employed to discriminate lager beer samples from two different classes, according to their style and information provided on the label. Partial replacement of barley malt by adjuncts is a common practice adopted by large breweries, which can lead to a decrease in diastatic power, requiring the use of exogenous enzymes. For this reason, small variations in the spectral profile can occur in the carbohydrates region. Many studies have focused on differentiating beers according to type and brewing process. However, there have no studies concerning the discrimination of beers of the same type that differ only in style, using ^{1}H NMR spectroscopy. In this study PCA (first three components explained 81.5% of the dataset variability), PLS-DA and SIMCA models proved to be powerful tool with predict power higher than 90% for distinguishing lager beers based on the raw materials employed in the brewing process.

Keywords: Brazilian lager beer, malt barley and adjunct, NMR, PCA, PLS-DA, SIMCA

1. Introduction

Beer, the world's most popular fermented alcoholic beverage, is made using water, barley malt, hops, and yeast (Silva, Augusto, & Poppi, 2008). Malt is the main source of

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