Accepted Manuscript

Use of Fourier transform infrared spectroscopy to monitor sugars in the beer mashing process

Francylaine Silva de Almeida, Cinthia Aparecida de Andrade Silva, Sandro Marcio Lima, Yzel Rondon Suarez, Luis Humberto da Cunha Andrade

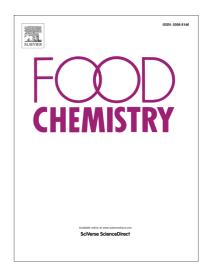
PII: S0308-8146(18)30749-0

DOI: https://doi.org/10.1016/j.foodchem.2018.04.109

Reference: FOCH 22804

To appear in: Food Chemistry

Received Date: 10 November 2017 Revised Date: 23 April 2018 Accepted Date: 24 April 2018



Please cite this article as: de Almeida, F.S., de Andrade Silva, C.A., Lima, S.M., Suarez, Y.R., da Cunha Andrade, L.H., Use of Fourier transform infrared spectroscopy to monitor sugars in the beer mashing process, *Food Chemistry* (2018), doi: https://doi.org/10.1016/j.foodchem.2018.04.109

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

CCEPTED MANUSCRIPT

Use of Fourier transform infrared spectroscopy to monitor sugars in the beer

mashing process

Francylaine Silva de Almeida^a, Cinthia Aparecida de Andrade Silva^b, Sandro Marcio

Lima^a, Yzel Rondon Suarez^a, Luis Humberto da Cunha Andrade^{a,*}

^a Postgraduate Program in Natural Resources, State University of Mato Grosso do Sul,

C.P. 351, Dourados, MS, Brazil

^b Laboratory of Bioengineering, Faculty of Biological and Environmental Sciences,

Federal University of Grande Dourados, Dourados, MS, 79804-970, Brazil

Abstract

Mashing is an enzymatic procedure for the extraction of sugars from malt. It has strong

temperature dependence, so monitoring the sugar production is very important for

optimization of the brewing process. In this work, Fourier transform infrared

spectroscopy (FTIR) was used to monitor three different mashing programs. These all

presented high concentrations of maltose and dextrin, enabling their differentiation

according to the FTIR absorption bands at 991 and 1022 cm⁻¹, characteristic of maltose

and dextrin, respectively. The absorption intensities of these bands were used to monitor

the concentrations of the compounds during mashing, and the values were compared to

HPLC data. Multivariate analysis of variance was applied to the FTIR absorption

intensities in order to separate groups corresponding to the temperature steps of each

mashing program. The results demonstrated that infrared absorption offers an

alternative to the HPLC method for monitoring the mashing process.

Keywords: Beer mashing; maltose; dextrin; infrared absorption; HPLC.

1

Download English Version:

https://daneshyari.com/en/article/7584715

Download Persian Version:

https://daneshyari.com/article/7584715

Daneshyari.com