

Author's Accepted Manuscript

Simultaneous determination of *tert*-butylhydroquinone, propyl gallate, and butylated hydroxyanisole by flow-injection analysis with multiple-pulse amperometric detection

Dmytro Baval, Anastasios Economou, Jiri Zima, Jiri Barek, Hana Dejmekova



www.elsevier.com/locate/talanta

PII: S0039-9140(17)30976-1
DOI: <http://dx.doi.org/10.1016/j.talanta.2017.09.032>
Reference: TAL17935

To appear in: *Talanta*

Received date: 27 May 2017
Revised date: 8 September 2017
Accepted date: 10 September 2017

Cite this article as: Dmytro Baval, Anastasios Economou, Jiri Zima, Jiri Barek and Hana Dejmekova, Simultaneous determination of *tert*-butylhydroquinone, propyl gallate, and butylated hydroxyanisole by flow-injection analysis with multiple-pulse amperometric detection, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2017.09.032>

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 galley proof before it is published in its final citable 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.

Simultaneous determination of *tert*-butylhydroquinone, propyl gallate, and butylated hydroxyanisole by flow-injection analysis with multiple-pulse amperometric detection

Dmytro Bavor^{a,b}, Anastasios Economou^a, Jiri Zima^b, Jiri Barek^b, and Hana Dejmkova^b

^aLaboratory of Analytical Chemistry, Department of Chemistry, University of Athens, 157 71 Athens, Greece

^b Charles University in Prague, Faculty of Science, Department of Analytical Chemistry, University Research Centre Supramolecular Chemistry, UNESCO Laboratory of Environmental Electrochemistry, Albertov 6, CZ-128 43 Prague 2, Czech Republic

dejmkova@natur.cuni.cz

Abstract:

We report the first amperometric method for the simultaneous determination of *tert*-butylhydroquinone (tBHQ), propyl gallate (PG), and butylated hydroxyanisole (BHA) using flow injection analysis coupled to multiple-pulse amperometry. A sequence of potential pulses was selected in order to detect tBHQ, PG, and BHA separately in a single injection step at a glassy carbon electrode without the need of a preliminary separation. A mixture of methanol and 0.040 M Britton-Robinson buffer was used both as a carrier solution and for dilution of analysed solutions before injection. The method is precise ($RSD < 5\%$, $n=10$), fast (a frequency of 140 injections h^{-1}), provides sufficiently low quantification limits (2.51, 1.45, and 0.85 $\mu\text{mol L}^{-1}$ for tBHQ, PG, and BHA, respectively) and can be easily applied without high demands on instrumentation. As a practical application, the determination of these antioxidants contained in commercial chewing gum samples was carried out by applying a simple extraction procedure.

Graphical abstract



Keywords: flow injection analysis; multiple-pulse amperometry; glassy carbon electrode; antioxidants.

1 Introduction

Synthetic phenolic antioxidants are extensively used in the food industry as additives to improve the stability of various products, especially for the prevention of lipid oxidation reactions, responsible for the production of volatile compounds with unpleasant flavours. Among the most

Download English Version:

<https://daneshyari.com/en/article/5140392>

Download Persian Version:

<https://daneshyari.com/article/5140392>

[Daneshyari.com](https://daneshyari.com)