Indonesian Journal of Chemistry
ISSN: 1411-9420 (print); 2460-1578 (online)
Published by Chemistry Department Universitas Gadjah Mada

#58537 Summary

SUMMARY REVIEW EDITING

Submission

Authors	Rini Dwiastuti, Dina Christin Ayuning Putri, Maywan Hariono, Florentinus Dika Octa Riswanto
Title	Multiple Response Optimization of a HPLC Method for Analyzing Resorcinol and 4-*n*-Butyl Resorcinol in Lipid Nanoparticles
Original file	58537-180010-1-SM.DOC 2020-08-12
Supp. files	58537-180027-1-SP.DOCX 2020-08-12
Submitter	myTkcy Rini Dwiastuti
Date submitted	August 12, 2020 - 03:14 PM
Section	Short Communication
Editor	Mudasir Mudasir
Author comments	

August, 12th 2020

To

The Editor

Indonesian Journal of Chemistry

We would like to submit our manuscript entitled "**Multiple Response Optimization of a HPLC Method for Analyzing Resorcinol and 4n-Butyl Resorcinol in Lipid Nanoparticles**" for the consideration of the publication in Indonesian Journal of Chemistry.

In this paper, we have performed multiple response optimization to obtain an optimized reversed-phase HPLC separation condition for separating resorcinol and 4n-butyl resorcinol. HPLC condition such as methanol and acetonitrile percentage of mobile phase and its flowrate were observed as independent variables and nine experimental responses were stated as dependent variables. The optimization process was followed by system suitability test and quantitative determination for estimating the content of resorcinol and 4n-butyl resorcinol in lipid nanoparticle samples.

We hope very much that this manuscript is suitable for the publication in your esteemed journal. Your kind consideration would be gratefully acknowledged.

Thank you.

Yours sincerely,

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Author Fees

Article Submission	0.00 USD	PAY NOW
Article Publication	Paid October 19, 2020 - 11:39 AM	

Status

Status	Published Vol 21, No 2 (2021)
Initiated	2021-03-31
Last modified	2022-06-21

Submission Metadata

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Title and Abstract

Title	Multiple Response Optimization of a HPLC Method for Analyzing Resorcinol and 4-*n*-Butyl Resorcinol in Lipid Nanoparticles

Abstract

Resorcinol and 4-n-butyl resorcinol have been used to improve skin health. However, these two compounds were unstable due to the oxidation process. Lipid nanoparticle formulation strategies were reported as the solution to overcome the stability problem for both resorcinol and 4-n-butyl resorcinol. Nevertheless, it is important to determine the content of resorcinol and 4-n-butyl resorcinol in lipid nanoparticle formulation. Aiming to develop the analytical method for resorcinol and 4-n-butyl resorcinol determination, a response surface methodology (RSM) was applied in the HPLC optimization stage. An optimized HPLC condition was

obtained by generating a Box-Behnken design followed by multiple response analysis. It was obtained that optimized HPLC conditions due to the predictive multiple response optimization were methanol percentage of 50.0%, acetonitrile percentage of 18.1%, and flow rate of 0.6 mL min^{-1}. This optimized condition was successfully applied and met the requirements of the system suitability test. Quantitative estimation was performed and resulted that the resorcinol and 4-n-butyl resorcinol content in lipid nanoparticles were 70.37 ± 0.47 and 95.07 ± 0.80 µg mL^{-1}, respectively.

Indexing

Keywords: 4-n-butyl resorcinol; Box-Behnken design; HPLC; optimization; resorcinol
Language: en

Supporting Agencies

Agencies: –

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[IJC] Editor Decision

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Kepada: myTkcy Rini Dwiastuti <rini_dwi@usd.ac.id>

Dear myTkcy Rini Dwiastuti:

We have reached a decision regarding your submission to Indonesian Journal of Chemistry, "Multiple Response Optimization of a HPLC Method for Analyzing Resorcinol and 4n-Butyl Resorcinol in Lipid Nanoparticles".

Our decision is to: Accept Submission

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