

A multi-pumping flow analysis system for β -galactosidase activity assays.

Autorzy

Justyna Skoczek

Marta Pokrzywnicka

Olga Kubacka

Robert Koncki

Rok wydania

2019

Czasopismo

Food Chemistry

Numer woluminu

294

Strony

231-237

DOI

10.1016/j.foodchem.2019.04.045

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

A fully mechanized Arduino-controlled multi-pumping flow analysis system and procedure for the determination of β -galactosidase activity are proposed. The applied bioanalytical method is based on the determination of *p*-nitrophenol formed in the course of enzyme-catalyzed hydrolysis of *p*-nitrophenyl-galactopyranosides. The photometric detection is performed using dedicated flow-through optoelectronic detector made of paired light emitting diodes. The developed bioanalytical system was applied for evaluation of optimal enzyme detection conditions (pH, temperature and reaction time), selection of appropriate substrate for the assays, comparison of enzymes of different origins (isoenzymes), detection of β -galactosidase inhibitor and finally to the determination of enzyme activity in some dietary supplements dedicated for people suffering from lactose intolerance. Depending on measurements conditions the developed bioanalytical system allows determination of β -galactosidase in the wide range of activity (up to 15U/mL at detection limit ca 0.01U/mL) with high sample flowthroughput (up to 30 detections per hour). Additionally, the potential utility of the developed analytical system for amyloglucosidase activity assays has been demonstrated.

Słowa kluczowe

β -Galactosidase, Lactose intolerance, Dietary supplements, Flow analysis

Adres publiczny

<http://dx.doi.org/10.1016/j.foodchem.2019.04.045>

Strona internetowa wydawcy

<http://www.elsevier.com>