Accepted Manuscript

Title: Development of new methods for determination of bilirubin

Authors: Lightson Ngashangva, Vinay Bachu, Pranab Goswami

PII: S0731-7085(18)31450-X
DOI: https://doi.org/10.1016/j.jpba.2018.09.034
Reference: PBA 12227

To appear in: *Journal of Pharmaceutical and Biomedical Analysis*

Received date: 17-6-2018
Revised date: 11-9-2018
Accepted date: 16-9-2018

Please cite this article as: Ngashangva L, Bachu V, Goswami P, Development of new methods for determination of bilirubin, *Journal of Pharmaceutical and Biomedical Analysis* (2018), https://doi.org/10.1016/j.jpba.2018.09.034

Development of new methods for determination of bilirubin

Lightson Ngashangva, Vinay Bachu, and Pranab Goswami*

Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati,

Guwahati, Assam 781039

***Correspondence:** Fax: +91 361 2582249; Tel: +91 361 2582202; E-mail: pgoswami@iitg.ernet.in (P. Goswami)

HIGHLIGHTS

- This review describes the advances on new methods for determination of bilirubin.
- Bilirubin is a tetrapyrrole compound formed by breakdown of blood heme.
- Deviation of its concentration from normal level in serum is associated with many pathological conditions.
- Hence, it is a key compound in blood bearing immense diagnostic importance.
- Rapid and selective bilirubin determination has also prime importance for managing jaundice neonatals.
- Effort is on to develop efficient, portable and low cost detection system for various forms of bilirubin.

Abstract

The ever-increasing demand for a sensitive, rapid and reliable method for determination of serum bilirubin level has been inciting the interest of the researchers to develop new methods for both laboratory set up and point of care applications. These efforts embrace measurement of different forms of bilirubin, such as, unconjugated (free and albumin bound) bilirubin, conjugated (direct) bilirubin, and total (both conjugated and unconjugated) bilirubin in the serum that may provide critical information useful for diagnosis of many diseases and metabolic disorders. Herein, an effort has been made to provide a broad overview on the subject starting from the conventional spectroscopy based analytical methods widely practiced in the laboratory setup along with the sophisticated instrument based sensitive methods suitable for determination of different forms of bilirubin to various portable low cost systems applicable in point of care (POC) settings. In all these discussions emphasis is given on the novel methods and techniques bearing potential to measure the bilirubin level in biological samples reliably with less technical complexity and cost.