

## Author's Accepted Manuscript

Determination of urea with special emphasis on biosensors: A Review

C.S. Pundir, Seema Jakhar, Vinay Narwal



www.elsevier.com/locate/bios

PII: S0956-5663(18)30766-8  
DOI: <https://doi.org/10.1016/j.bios.2018.09.067>  
Reference: BIOS10807

To appear in: *Biosensors and Bioelectronic*

Received date: 27 July 2018  
Revised date: 9 September 2018  
Accepted date: 19 September 2018

Cite this article as: C.S. Pundir, Seema Jakhar and Vinay Narwal, Determination of urea with special emphasis on biosensors: A Review, *Biosensors and Bioelectronic*, <https://doi.org/10.1016/j.bios.2018.09.067>

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.

## Determination of urea with special emphasis on biosensors: A Review

C.S. Pundir\*, Seema Jakhar, Vinay Narwal

Department of Biochemistry, M.D.University, Rohtak-124001, (Haryana) India

\*Corresponding author. chandraspundir@gmail.com

### Abstract

Urea is the major end product of nitrogen metabolism in humans, which is eliminated from the body mainly by the kidneys through urine but is also secreted in body fluids such as blood and saliva. Its level in urine ranges from 7-20 mg/dL, which drastically rises under pathological conditions thus providing key information of renal function and diagnosis of various kidney and liver disorders. Increase in urea levels in blood, also referred to as azotemia or uremia. The chronic kidney disease (CKD) or end stage renal disease (ESRD) is generally caused due to the progressive loss of kidney function. Hence, there is an urgent need of determination of urea in biological fluids to diagnose these diseases at their early stage. Among the various methods available for detection of urea, most are complicated and require time-consuming sample pre-treatment, expensive instrumental set-up and trained persons to operate, specifically for chromatographic methods. The biosensing methods overcome these drawbacks, as these are simple, fast, specific and highly sensitive and can also be applied for detection of urea in vivo. This review presents the principles of various analytical methods for determination of urea with special emphasis on biosensors. The use of various nanostructures and electrochemical microfluidic paper based analytical device (E $\mu$ PAD) are suggested for further development of urea biosensors.

Keywords: Urea; Urea biosensors; Nano-materials; Immobilization; Serum; Urine

Download English Version:

<https://daneshyari.com/en/article/11020647>

Download Persian Version:

<https://daneshyari.com/article/11020647>

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