

Documents

Mzougui, S.^a, Favresse, J.^b, Soleimani, R.^a, Fillée, C.^a, Gruson, D., Prof.^{a c}

Biotin interference: Evaluation of a new generation of electrochemiluminescent immunoassays for high-sensitive troponin T and thyroid-stimulating hormone testing

(2020) *Clinical Chemistry and Laboratory Medicine*, 58 (12), pp. 2037-2045. Cited 4 times.

DOI: 10.1515/cclm-2020-0214

^a Department of Clinical Biochemistry, Cliniques Universitaires St-Luc, Université Catholique de Louvain, Brussels, Belgium

^b Department of Laboratory Medicine, Clinique St-Luc Bouge, Namur, Belgium

^c Pôle de Recherche en Endocrinologie, Diabète et Nutrition, Institut de Recherche Expérimentale et Clinique, Cliniques Universitaires St-Luc, Université Catholique de Louvain, Tour Claude Bernard, 54 Avenue Hippocrate, Brussels, 1200, Belgium

Abstract

Biotin is currently a matter of concern for laboratories using biotin-streptavidin-based immunoassays. Biotin interferences have been reported for high-sensitive troponin T (hsTnT) and thyroid-stimulating hormone (TSH) assays. We aimed to evaluate the new generation of hsTnT and TSH electrochemiluminescent immunoassays announced to be less sensitive to biotin. Firstly, we assessed the analytical performances of new generation assays (imprecision, bias, total error, limit of quantification) and compared previous and new generation assays in the absence of biotin. Secondly, we challenged both generations of assays with samples spiked with seven different biotin levels. The efficiency of new generation assays was also compared to the streptavidin beads treatment. New generation assays presented suitable analytical performances. Previous and new generations of hsTnT and TSH assays were commutable in the absence of biotin. In the presence of biotin, we confirmed that previous generation assays were affected by biotin concentration as low as 40.5 ng/mL and that new generation assays were not affected up to the announced tolerance threshold of 1200 ng/mL. After the streptavidin beads treatment, we observed a higher imprecision for both parameters and a constant 10% negative bias for TSH compared to new generation assays. New generation of electrochemiluminescent immunoassays appears as a reliable systematic solution to prevent biotin interference for hsTnT and TSH testing. © 2020 Walter de Gruyter GmbH, Berlin/Boston.

Author Keywords

biotin; immunoassays; interference; thyroid-stimulating hormone (TSH); troponin

Index Keywords

biotin, streptavidin, thyrotropin, troponin T, biotin, thyrotropin, troponin T; analytical parameters, Article, controlled study, electrochemiluminescence, evaluation study, human, immunoassay, intermethod comparison, limit of detection, limit of quantitation, measurement error, measurement precision, priority journal, artifact, chemistry, electrochemical analysis, immunoassay, immunological procedures, procedures, thyroid function test; Artifacts, Biotin, Electrochemical Techniques, Humans, Immunoassay, Immunologic Tests, Streptavidin, Thyroid Function Tests, Thyrotropin, Troponin T

Publisher: De Gruyter Open Ltd

ISSN: 14346621

CODEN: CCLMF

PubMed ID: 32324155

2-s2.0-85084409649

Document Type: Article

Publication Stage: Final

Source: Scopus

