

3rd International Conference and Exhibition on Metabolomics & Systems Biology

March 24-26, 2014 Hilton San Antonio Airport, San Antonio, USA

Bilirubin as a biological marker for metabolic, cardiovascular and oncological disorders; Analysis using GOBIOM database

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Current advances in biomarker research area are aiding us in the development of new and clinically reliable indicators that will have a high specificity for the diagnosis and prognosis of the disease. The selection of a biomarker should have a biological or therapeutic basis and it should indicate a reliable correlation with the presence, characteristics, or aggressiveness of the disease. High levels of serum bilirubin, the principal product of heme degradation and a powerful antioxidant that suppresses lipid oxidation, have been viewed by clinicians as a marker of liver dysfunction. Epidemiological research has demonstrated an inverse relationship between elevated serum bilirubin levels and the development of CVD and some forms of cancer due to its antioxidant properties. Few studies have shown that this inverse relationship extends to other heart related disease risk factors such as diabetes, metabolic syndrome, peripheral artery disease (PAD), carotid intima-media thickening, and stroke. Our objective was to identify the reliability of Bilirubin as a biochemical diagnostic biomarker in metabolic, cardiovascular and oncological disorders based on the literature that is published on Bilirubin for multiple indications and establish its association with a single disease which is highly sensitive compared to others. To do the analysis, we used the data from GVK BIO Online Biomarker Database (GOBIOM), which is a repository of all clinical, preclinical and exploratory biomarkers reported for various indications. As on today, GOBIOM contains ~30000 known biomarkers data for 900 indications extracted from ~100000 references which includes journals, patents, scientific conferences and clinical trials. We retrieved Bilirubin biomarker data for all the reported indications from GOBIOM database and analyzed the levels of this marker in various indications compared to the healthy controls. Though abnormal Bilirubin levels are widely reported for variety of liver disorders, there are also reports showing its prominent role in other indications like pancreatic cancer, osteoarthritis, appendicitis, allograft rejection etc. Using the analysis tools of GOBIOM, we compared the percentage difference of Bilirubin between the diseased patients and healthy controls for all the reported indications to identify the diagnostic significance of this marker for the given indication.

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