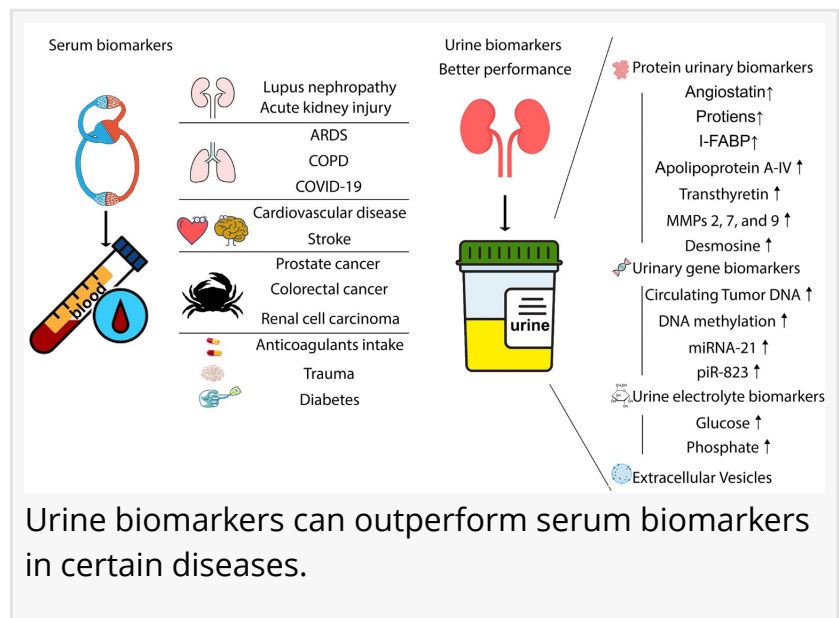


Urine biomarkers can outperform serum biomarkers in certain diseases

CHINA, November 2, 2023

/EINPresswire.com/ -- Urinary [biomarkers](#) have the potential to surpass serum biomarkers in disease diagnosis and monitoring. This review highlights their non-invasive, stable, and specific nature. It explores a range of urinary biomarkers, such as proteins, genes, metabolites, electrolytes, and extracellular vesicles, showing their superiority. Combining urinary and serum biomarkers promises a more comprehensive approach to healthcare, though standardization and disease repertoire expansion remain challenges. Urinary biomarkers hold immense promise in improving patient outcomes and transforming healthcare.



In recent decades, the emphasis of biomarker research has centered around blood-based markers. However, blood biomarkers alone cannot capture the full spectrum of clinically relevant indicators. Consequently, urine has emerged as a valuable and complementary source of information, with increasing evidence of the diagnostic potential of urinary biomarkers compared to their serum counterparts for the detection of specific diseases.

In a study published in the KeAi journal *Urine*, a group of researchers from China, including Prof Zhiguo Mao and Dr. Cheng Xue from the Shanghai Changzheng Hospital, together with Prof Youhe Gao from Beijing Normal University, reported the enhanced performance of urinary biomarkers compared to plasma biomarkers for disease detection.

“Blood, being a complex fluid with multiple physiological functions, remains relatively stable due to the body's homeostatic mechanisms. In contrast, urine, a waste product generated by the kidneys, changes over time, making it an excellent source of early biomarkers,” explained Xue, first author of the study.

Notably, urine does not require stability mechanisms, rendering it more accurate in reflecting introduced changes in the body.

“The direct association between urine and the urinary system positions it as a prime area for discovering biomarkers, particularly in the context of urological diseases,” added Xue.

The process of urine formation in the nephrons allows for the concentration of specific urinary system biomarkers, which may be in higher levels in urine compared to in blood. Additionally, smaller molecules that can pass through the filtration stage and are not reabsorbed tend to become concentrated in urine, making them more easily detectable.

Furthermore, the ease and non-invasiveness of urine collection make it an attractive biofluid for biomarker discovery, and urinary proteins can be efficiently preserved for long-term archiving.

“A key takeaway from our findings is the potential for a combined approach, leveraging both urinary and serum biomarkers for a more holistic and personalized strategy for disease diagnosis and management,” said Xue.

Nonetheless, the team acknowledges the challenges in realizing this potential, particularly the standardization of urinary biomarker assays and the expansion of the spectrum of diseases that can be diagnosed using urinary biomarkers.

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