

前沿论坛

基于液相色谱的代谢组学的慢性肾病研究进展

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摘要 代谢组学属于系统生物学的一部分,是在某个特定环境下研究生物体系受刺激或扰动前后内源性小分子代谢产物图谱及其动态变化。代谢组学是采用现代不同分析技术测定生物体液、细胞提取物、细胞培养液或组织中代谢物的变化。代谢组学研究将为临床用药、疾病诊断和病理机制研究提供一个整体的方法。慢性肾脏病是常见病和多发病之一,其包括早期的慢性肾小球性肾炎(IgA肾病)、后续的慢性肾损伤(糖尿病性肾病)、慢性肾衰竭(肾移植前后的终末期肾病)等。目前慢性肾病的病理机制和治疗尚未完全明确,本文概括液相色谱-代谢组学技术应用于阐明慢性肾病(动物实验和临床应用)的生物化学作用机制研究,以便寻找新的生物标志物,提出代谢组学应用于慢性肾病面临的挑战,希望代谢组学能鉴定的生物标志物应用于慢性肾病的早期诊断及治疗研究。

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Applications of LC-based metabolomics in chronic kidney diseases

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Abstract

Metabolomics, as an omics science in systems biology, is the global unbiased analysis of all the endogenous small-molecule metabolites within a biological system under a given set of conditions. Either individually or grouped as a metabolomic profile, the detection of metabolites is carried out in cells, tissues, or bio-fluids by different analytical approaches. Metabolomics offers the potential for a holistic approach to clinical medicine while improving disease diagnosis and our understanding of the pathological mechanisms. Chronic kidney diseases (CKDs) are a major challenge to public health. They include the primary chronic glomerulonephritis (IgA nephropathy), secondary chronic renal injury (diabetic nephropathy) and the chronic renal failure (end-stage kidney disease with and without undergoing replacement therapies). The root causes for disease onset remain poorly understood and no cures are available. In this review, the role of metabolomics is explored in gaining mechanistic insight into CKDs including animal models and clinical studies, and in the search for novel biomarkers. Particular challenges in the field are presented and placed within the context of the future of the applications of metabolomics approaches to the study of CKDs. A future hope for the metabolomic approach is the

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