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# Urinary Podocyte Markers in Kidney Disease

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Podocytes play a crucial role in maintaining kidney function and are a primary focus in the study of kidney diseases. Injury to podocytes can lead to the shedding of podocyte-derived cellular fragments and molecular targets into the urine, which may serve as biomarkers for the diagnosis and monitoring of kidney diseases. A number of different methods, including centrifugation, visualization, and molecular quantification, have been used to detect intact podocytes as well as various podocyte-derived microvesicles in urine. Podocyte-specific protein targets from the nucleus, cytoplasm, slit-diaphragm, glomerular capillary basement membrane, and cytoskeleton, can be quantified by western blotting or ELISA, and the corresponding messenger RNA levels by quantitative polymerase chain reaction. Although some of these techniques are expensive or labor-intensive at this moment, they will likely be more widely available in the future as a result of technological advancements and automation. While the use of urinary podocyte markers for the diagnosis and monitoring of kidney diseases has been explored, published data in this area lack systematic studies and external validation. Further research should focus on standardizing and automating laboratory methods, as well as defining their added value to routine clinical tests.