

Albuminuria

Urinary excretion of albumin does not physiologically exceed 30 mg/24 hours (i.e. 20 µg/min or about 15-20 mg/l)^[1]. However, conventional tests for proteinuria (using diagnostic strips, sulphosalicylic acid test) can only detect protein when the albumin concentration exceeds about 150 mg/l, i.e. when it is practically 10 times elevated^[2]. Losses of small amounts of albumin (30-300 mg/24 h) are demonstrable by immunochemical methods.

In older literature, the term **microalbuminuria** was used for small albumin losses that are demonstrable by immunochemistry but not by conventional proteinuria tests.

Screening for albuminuria is particularly valuable in patients with diabetes mellitus type II, but also in other disorders of glucose metabolism and in hypertensives. The finding of small amounts of albumin in the urine is an early sign of complications of these diseases, especially diabetic or hypertensive nephropathy and vasculopathy, and is often a reason to intensify treatment.

An increase in albuminuria is a very sensitive indicator of damage to the glomerular apparatus. This is due to the fact that albumin in small amounts passes through the glomerular membrane even physiologically. Under normal circumstances, however, it is almost completely resorbed in the proximal tubules. However, the tubular resorption capacity of albumin is virtually exhausted already during physiological albumin filtration; any increase in the concentration of this protein in the glomerular filtrate therefore leads to a rapid increase in the concentration of albumin in the final urine^[2].

Albuminuria			
	mg/24 hour	µg/min	mg/mmol of creatinine
norm	< 30	< 20	< 3.5
elevated albuminuria	30-300	20-200	3.5-35
detectable proteinuria	> 300	> 200	> 35

To monitor disease progression and manage treatment, albuminuria needs to be quantified more precisely. Albumin is determined in **urine collected overnight** and losses are converted to µg of albumin per minute. Values less than 100 µg/min usually correspond to reversible damage, which can be influenced by careful compensation for diabetes and arterial hypertension^[1].

Another option is to determine albumin in the first morning urine sample and calculate the **albumin/creatinine ratio**. Physiologically, this index is around 2.8-22.8 g of albumin per mole of creatinine^[2].

For albuminuria testing to be meaningful, it is necessary to exclude uroinfection.

References

Related articles

- Proteinuria

References

1. ZIMA, Tomáš, et al. *Laboratorní diagnostika*. 2. edition. Praha : Galén a Karolinum, 2007. 906 pp. pp. 106-7, 121-2. ISBN 978-80-246-1423-6.
2. RACEK, Jaroslav, et al. *Klinická biochemie*. 2. edition. Praha : Galén, 2006. 329 pp. pp. 170. ISBN 80-7262-324-9.