Kidney Injury Molecule-1 (KIM-1)

Aacute kidney injury (AKI) is defined as a condition in which the kidney function and structure are suddenly affected. It is a serious disease but with a timely treatment can be reversible. AKI is common complication with critically ill patients (1) and it is also recognized as a life-threatening pathology closely associated with metabolic syndrome and cardiovascular diseases (2). AKI can occur in a variety of clinical settings and is common complication in patients after cardiac surgery (3).

Currently, serum creatinine is measured to diagnose AKI as it provides information of the glomerular filtration rate. However, serum creatinine levels do not change until ~50% of kidney function is lost (4). Furthermore, its inter-individual variability is high. This makes it a suboptimal biomarker of AKI in which the early diagnosis can significantly improve the outcome.

Monoclonal antibodies specific to KIM-1

HyTest provides two monoclonal antibodies (MAbs) specific to the ectodomain of human KIM-1. They are suitable for a quantitative detection of KIM-1 in urine using a sandwich ELISA.
Quantitative sandwich immunoassay

Calibration curve for KIM70-KIM75 (capture-detection) is shown in Figure 1. The limit of detection for this pair in fluoroimmunoassay is ~0.2 ng/ml. The prototype assay was also tested for its ability to detect native KIM-1 in urine samples from patients with cardio-renal syndrome, trauma, and pyelonephritis (Figure 2).

![Calibration curve for KIM70-KIM75](image1)

Figure 1. Calibration curve for KIM70-KIM75 fluoroimmunoassay. The MAb KIM70 was used for capture (1 μg/well), detection MAb KIM75 was labeled with stable Eu³⁺ chelate (0.2 μg/well). Recombinant human KIM-1 ectodomain (in-house preparation) in a buffer containing 0.1% sodium deoxycholate and 10 mM glucose was utilized as an antigen.

![Detection KIM-1 in human urine samples](image2)

Figure 2. Detection of KIM-1 in human urine samples by the KIM70-KIM75 sandwich fluoroimmunoassay. Urine samples were obtained from patients with trauma (patient 1), with pyelonephritis (patient 2), and with cardio-renal syndrome (patients 3 and 4). In addition, urine samples from four apparently healthy volunteers (healthy 1, 2, 3, 4) were tested. All samples were diluted 1:1 with a buffer containing 0.1% sodium deoxycholate and 10 mM glucose. A recombinant human KIM-1 ectodomain (in-house preparation) was used as a calibrator.

Ordering information

MONOCLONAL ANTIBODIES

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References