

Kappa and Lambda Light Chains, in serum and urine, for *Optilite*[®] analyzer

General information: structure, function ...

Immunoglobulin molecules are composed of two identical heavy chains (HC) of the same type and two identical light chains (LC) of the same type, linked by a variable number of disulphide bridges and non-covalent links. The amount of LC and HC produced by plasma cells is unbalanced, resulting in an excess of LC (FLC = Free Light Chains) that are secreted in the serum and, given their low molecular weight (approx. 22-25 KDa for the monomers), are almost completely eliminated by the kidney. Nevertheless, in healthy individuals the majority of LC in serum exist bound to HC (BLC = Bound Light Chains) as intact immunoglobulin molecules, and under normal conditions, total κ/λ ratio should be normally around 2:1 in serum.

In the so-called monoclonal gammopathies, plasma cells usually generate large (sometimes huge) quantities of monoclonal immunoglobulin LC, which may be present either alone or in conjugation with intact immunoglobulin molecules.

Clinical Significance

In multiple pathological conditions, such as Multiple Myeloma, Waldenström's Macroglobulinemia, AL Amyloidosis, Light chain deposition disease (LCDD) and, in general, in all monoclonal gammopathies, the observation of a disturbance in the κ/λ ratio, or an increase in the amount of LC, can be used to detect or confirm most immunoglobulin abnormalities. Moreover, given the situation of overproduction, an increase in the concentration of free LC present in serum occurs, and when the reabsorption capacity of the tubules is exceeded, monoclonal FLC are also found in the urine (the so-called Bence-Jones proteinuria), being this situation another indicator of monoclonal gammopathies. However, when renal damage is present, intact immunoglobulins can also appear in the urine, and given that the assays measure both bound and free LC, the use of assays specific for Free Light Chains may be advisable.

In both serum and urine, the confirmation of the monoclonality should always be done with other assays, not only immunochemical, such as electrophoresis, immunoelectrophoresis or immunofixation.

Assay Performances and Characteristics

- ➔ **Turbidimetric Immunoassays (TIA)**, for their use on *Optilite*[®] analyzer.
(*Optilite*[®] is a registered trademark of *Binding Site part of Thermo Fisher Scientific*.)
- ➔ Reagents, Calibrator and Controls in ready-to-use containers.
- ➔ Traced to the **European Reference Material** (code: ERM[®]-DA470k/IFCC), of the *Institute for Reference Materials and Measurements (IRMM)*, using the M.M. Lievens' formula (J.Clin.Chem.Clin.Biochem 1989;27:519-23).
- ➔ QR codes for loading analytical parameters into the analyzer. Application version control.

Catalogue

3diag - KAP - Opt Kit

REF TD-42777 ▽ 100 test

EAN/GTIN: 8434477711138

Contains Reagents, Calibrator and Controls

3diag - U-KAP - Opt Kit

REF TD-42787 ▽ 100 test

EAN/GTIN: 8434477711145

Contains Reagents, Calibrator and Controls

3diag - LAM - Opt Kit

REF TD-42778 ▽ 100 test

EAN/GTIN: 8434477711152

Contains Reagents, Calibrator and Controls

3diag - U-LAM - Opt Kit

REF TD-42788 ▽ 100 test

EAN/GTIN: 8434477711169

Contains Reagents, Calibrator and Controls

Also available for other analytical platforms. For further information, please contact the Customer Support Service at support@3diag.com