

FluoBoltTM - KLOTHO

High Sensitivity, Single Step Immunoassay for α-KLOTHO in Human Serum and Plasma

Signal Enhanced Fluorescence Immunoassay on Plasmonic Substrates

High Sensitivity
Single Step Assay
No Wash
No Enzyme Substrate
Stable Signal over Time

www.fianostics.at

FluoBolt™-KLOTHO

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About FluoBolt[™]-Technology:



For more information about FluoBolt[™]-Technology, please visit: <u>www.fianostics.at/en/technology</u>

FluoBolt[™] – Technology is based on a physical effect called "Metal Enhanced Fluores – cence" which is generated by metal nanostructures on the bottom of our micro plates. Those structures create a very strong local electromagnetic field ("localized surface plasmon"), that greatly enhances the fluorescence of surface bound fluorophores. The unique features of FluoBolt[™] – Technology enable us to develop direct fluorescence immunoassays with the following benefits:

- High Sensitivity
- Single Step Procedure
- No Washing Steps
- No Enzyme Substrate required
- Long Term Stable Signal

About FluoBolt[™]-KLOTHO (Cat. Nr. 1704):

 α – KLOTHO is a protein belonging to the glycosyl hydrolase 1 family. It can be found either as a membrane bound or a secreted form, which is the more abundant form. α – KLOTHO is expressed in kidney, small intestine, placenta and prostate. The soluble peptide can be found in serum and cerebrospinal fluid. KLOTHO is a co-receptor of fibroblast growth factor 23 (FGF – 23) and it plays an important role in calcium/ phosphorus homeostasis regulation by e. g. inhibiting active vitamin D synthesis. Further, it is also known as an anti–aging–hormone by extending life span through inhibiting insulin/ IGF1 signalling pathway, as experiments in mice showed. Although there are some assay systems for measuring α – KLOTHO available,

current existing clinical data are noncoherent. Therefore, we decided to use our FluoBoltTM – Tech – nology to provide a high sensitivity α – KLOTHO assay for clinical research, that may improve data consis – tency. Determination of serum α – KLOTHO has been used for studying the following topics:

- Chronic Kidney Disease (CKD)
- Renal and Hepatocellular Carcinomas
- Osteoporosis
- Cardiovascular diseases

Assay Characteristics

Literature

- The Prognostic Role of Klotho in Patients with Chronic Kidney Disease: A Systematic Review and Meta – nalysis. Liu QF et al., Dis Markers. 2019 Jun 2;2019:6468729.
- Klotho plays a critical role in clear cell renal cell carcinoma progression and clinical outcome. Kim JH et al., Korean J Physiol Pharmacol. 2016 May;20(3):297 – 304.
- The Biological Role of Klotho Protein in the Development of Cardiovascular Diseases.Olejnik A et. al, Biomed Res Int. 2018 Dec 24;2018:5171945.
- Klotho, a new marker for osteoporosis and muscle strength in β - thalassemia major. Baldan A et al. Blood Cells Mol Dis. 2015 Dec;55(4):396-401.

Method	Metal Enhanced Direct Sandwich Fluorescence Immunoassay in 96-well plate format
Sample type	Serum, Plasma
Standard range	0 to 400 pmol/l (6 standards and 2 controls in a serum based matrix)
Conversion factor	1 ng/ml = 16pmol/l (MW: 62.1kD)
Sample volume	10 µl (undiluted sample) / well
Incubation steps/time/temperature	Single step assay, over night at room temperature
Sensitivity	LOD (0pmol/l+3SD): 2,5pmol/l;LLOQ: 25pmol/l
Specificity	This assay detects only α – KLOTHO and does not crossreact with β – KLOTHO. No inter– ference of recombinant FGF–23 with the assay`s signal up to a 100 fold molar excess was monitored. Human KLOTHO shares around 98–97% aa sequence with higher apes, 95–91% bovines, 91–89% pinnipeds and 87% mice. Cross-reactivity of this assay with other species than human has not been tested.