

A FLUORESCENCE-BASED ASSAY FOR KERATAN SULPHATE DETECTION IN HUMAN URINE

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A number of illnesses lead to an increased excretion of glycosaminoglycans (GAGs), such as mucopolysaccharidosis (MPS). Patients with mucopolysaccharidosis type IVA lack an enzyme involved in the sequential degradation of keratan sulphate (KS) and chondroitin sulphate (CS), hence excreting increased amounts of these GAGs. CS is the major GAG excreted in the urine of healthy individuals and MPS IVA patients, whilst up to 90% more KS is present in MPS IVA patients' urine. Previously, urinary KS was detected by Western blotting and colorimetric analysis. We have now developed a practical and sensitive fluorescence-based assay for the determination of KS content in urine, based on the method described by Martins, R.M.J. et al., 2003 and Vieira et al., 2005. This assay detects KS at very low concentrations (0.001-0.1 $\mu\text{g}/\text{mL}$) with a commercial monoclonal antibody 5-D-4 (Caterson et al., 1983, Mehmet et al., 1986) specific to the KS chain and europium - labeled streptavidin. This novel assay for KS detection is a simple and efficient method for the diagnosis of MPS IVA.

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