α-1 Microglobulin

Analyte: alpha-1 Microglobulin

Specimen Type: Urine

Optimum Volume: 0.5 mL

2-8°C	-20°C	-70°C
7 d	1 month	3 years

Reporting units: ug/mg Creatinine

Method: Immunoturbidimetric

Biological or Clinical Significance:

Alpha-1 microglobulin is member of the lipocalins superfamily of proteins with 30–35 members distributed among animals, plants, and bacteria. The members of the superfamily have a highly conserved three-dimensional structure. So far, three lipocalins have been shown to be enzymes. These include alpha-1 microglobulin, which was recently shown to have reductase/dehydrogenase properties. Also called protein HC, alpha-1 microglobulin is one of the first described lipocalins and is one of the most widespread lipocalins phylogenetically. So far, it has been found in mammals, birds, fish, and amphibians. The protein is synthesized by the liver, rapidly distributed by the blood to the extravascular compartment, and is found in most organs in interstitial fluids, connective tissue, and basement membranes. It is especially abundant at interfaces between the cells of the body and the environment, such as in lungs, intestine, kidneys, and placenta. Because of its small size, 26 kDa, alpha-1 microglobulin is rapidly cleared from the blood by glomerular filtration. Generally, most of the filtrated alpha-1 microglobulin is degraded in the kidneys, but a small part is excreted in the urine. Alpha-1 microglobulin purified from plasma and urine is yellow-brown in color and displays charge heterogeneity (*i.e.* a broad band upon electrophoresis). The color is caused by an array of small chromogenic groups attached to cystine and lysine amino acid residues. The biological function of alpha-1 microgolbulin is unknown, although it has a number of immunosuppressive properties, such as inhibition of antigen-induced lymphocyte cell proliferation, cytokine secretion, and the oxidative burst of neutrophils. Several recent findings suggest that this lipocalin is involved in reduction and scavenging of biological pro-oxidants, such as heme and heme-proteins (see reference 1).

Principle of Test Method:

First an antibody-antigen reaction occurs between alpha-1 microglobulin in a samples and alpha-1 microglobulin antibody on latex particles which results in agglutination. The

agglutination is detected by an absorbance change that is proportional to the quantity of alpha-1 microglobulin in the sample. The actual concentration is then determined by interpolation from a multipoint calibration curve.