

Viscosity

General:

The viscoelasticity of blood is traceable to the elastic red blood cells, which occupy about half the volume. When erythrocytes are at rest they tend to aggregate and stack together in a space efficient manner. In order for blood to flow freely, the size of these aggregates must be reduced, which in turn provides some freedom of internal motion. The forces that disaggregate the cells also produce elastic deformation and orientation of the cells, causing elastic energy to be stored in the cellular microstructure of the blood. As flow proceeds, the sliding of the internal cellular structure requires a continuous input of energy, which is dissipated through viscous friction. These effects make blood a viscoelastic fluid, exhibiting both viscous and elastic properties.

Variation in blood viscoelasticity among normals is very small. Thus, changes due to disease or surgical intervention can be readily identified, making blood viscoelasticity a useful clinical parameter. Plasma viscosity is determined by various macromolecules, eg, fibrinogen, immunoglobulins, and lipoproteins. Blood viscosity contributes to endothelial shear stress. Shear stress modulates the orientation of endothelial cells in the direction of flow and to the 'waviness' of the luminal surface of the vessel. For example, the viscoelasticity of an individual's blood changes significantly as the result of cardiopulmonary bypass surgery.

Also therapy with several medicaments have influence of the plasma viscosity (Atorvastatin, Methyltestosteron, Clopidogrel, Pentoxiphyllin, Cilostazol, Gabexat, Mesilat, Nafamostat, Carvedilol, Atenolol, Molsidomin), especially also hemodilution mit HAES (hydroxyethyl starch). Plasma viscosity is used as trigger for apheresis application for patients with hyperviscosity syndromes (e.g. plasmocytoma, senile macula degeneration).

Material: 3 ml EDTA Plasma (Do not freeze!)

TAT: 7 - 10 days*

Method: KVI

Units: msec

Ref.range: see report

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit <http://www.fml-dubai.com/parameter-listings/>