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Variation of velocity profile according to blood viscosity in a microfluidic channel¹ EUNSEOP YEOM, Pohang Univ of Sci & Tech, YANG JUN KANG, Chosun Univ, SANG-JOON LEE, Pohang Univ of Sci & Tech — The shear-thinning effect of blood flows is known to change blood viscosity. Since blood viscosity and motion of red blood cells (RBCs) are closely related, hemorheological variations have a strong influence on hemodynamic characteristics. Therefore, understanding on the relationship between the hemorheological and hemodynamic properties is importance for getting more detailed information on blood circulation in microvessels. In this study, the blood viscosity and velocity profiles in a microfluidic channel were systematically investigated. Rat blood was delivered in the microfluidic device which can measure blood viscosity by monitoring the flow-switching phenomenon. Velocity profiles of blood flows in the microchannel were measured by using a micro-particle image velocimetry (PIV) technique. Shape of velocity profiles measured at different flow rates was quantified by using a curve-fitting equation. It was observed that the shape of velocity profiles is highly correlated with blood viscosity. The study on the relation between blood viscosity and velocity profile would be helpful to understand the roles of hemorheological and hemodynamic properties in cardiovascular diseases.

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