

Rheological characterization of blood in health and disease using Front Microrheometry

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Introduction

The rheological properties of blood depend highly on the properties of its red blood cells, concentration, aggregation and membrane elasticity. These properties affect the viscosity of blood, as well as, its shear thinning behavior and, in some cases, are related to diseases, such as Iron Deficiency Anemia (IDA) and Beta-thalassemia, which affect the features of red blood cells. By mean of the experimental analysis of the front advancement of blood in a microchannel [1, 2], we determine the viscosity of different samples of blood. We present a method that successfully scales the viscosity of blood of healthy, anemic and beta-thalassemia trait (β -TT) blood samples, according to the concentration [3], corpuscular volume and the bending properties of its erythrocytes [4]. These results are the basis for the development of a front microrheometry point-of-care device for the diagnosis and clinical follow-up of β -TT patients suffering hematological diseases and alterations in the morphology of the red blood cell (RBC).

Referencias

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