

网织红细胞成熟过程中膜剪切弹性模量及表面粘度的改变

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用鸡抗兔血清的抗体使兔造成急性溶血性贫血的方法, 诱发兔体内同步生长的新生网织红细胞, 用文宗曜等提出的一种测量红细胞膜剪切弹性模量及表面粘度的新方法——新型激光衍射法, 连续72 h监测经过不同发育阶段的网织红细胞的小变形指数和变形恢复过程(即松弛过程)中变形恢复到最大值一半的时间(即变形恢复半时间, $t_{0.5}$), 将测得的结果分别代入红细胞膜的剪切弹性模量公式和表面粘度公式。计算出不同发育阶段的网织红细胞的膜剪切弹性模量和表面粘度, 发现网织红细胞在转变为成熟红细胞的过程中, 其膜剪切弹性模量和表面粘度有明显改变。这对研究由于贫血等原因造成的网织红细胞增多情况下全血的微观流变学特性有重要的临床意义, 同时对新生网织红细胞在转化过程中膜的剪切弹性模量和表面粘度的变化规律加以系统研究, 具有重要的基础理论研究价值。

THE CHANGES OF THE MEMBRANE SHEAR ELASTIC MODULUS AND VISCOSITY OF RETICULOCYTES IN THE COURSE OF TURNING INTO ERYTHROCYTES

To study the regularities of reticulocyte's membrane shear elastic modulus (E) and membrane viscosity (U_m), a model of anemia in rabbits induced by injection of antibody was established. Using a new ektacytometry, the small deformation index (DI)d and the half-time ($t_{0.5}$) for deformation relaxation of the reticulocytes under the abnormal physiological conditions were measured. (DI)d and $t_{0.5}$ were respectively put into the reticulocyte's formula and U_m formula when calculated the membrane shear elastic modulus and the membrane viscosity, The value of E and U_m in the process of reticulocytes changing into erythrocytes in vivo for 72 h was got. It was found that the membrane shear elastic modulus and membrane viscosity decreased in this process of changing. This finding may have some basic theoretical and clinical significance.

关键词