

# **Enhanced expression of glucose transporter 1 on erythrocyte membrane in hemodialysis patients: the possible role in erythrocyte ascorbate recycling**

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摘要

## **Abstract**

Background: Human erythrocytes can take up dehydroascorbate on the glucose transporter 1 (GLUT 1) and reduce it to ascorbate. Intraerythrocyte ascorbate was proved to be directly responsible for decreased oxidation of extraerythrocytic ascorbate. In addition to spontaneous and irreversible loss of ascorbate in plasma, the hemodialysis ( HD) process itself consumes plasma ascorbate. However, intraerythrocyte ascorbate status in uremic patients during HD has yet to be reported. Methods: Plasma and intraerythrocyte ascorbate, dehydroascorbate, GLUT 1 expression on erythrocyte membranes, and in vitro studies of "erythrocyte ascorbate recycling" were investigated in age- and sex-matched healthy subjects (control group) and HD patients (HD group). Results Intraerythrocyte ascorbate concentrations decreased after 1 HD session compared with pre-HD and recovered to pre-HD values 2 days later, whereas plasma ascorbate concentrations did not recover. In vitro studies suggested that erythrocytes of HD patients have a stronger ability to maintain intracellular ascorbate concentrations compared with healthy subjects. This ability could be inhibited by cytochalasin B (GLUT 1 inhibitor). We also found increased GLUT 1 expression ( $P = 0.002$ ) on erythrocyte membranes in the HD group compared with the control group. Conclusion: Erythrocytes of uremic patients lost large amounts of ascorbate during HD, but regained it to the pre-HD level 2 days later. Enhanced GLUT 1 expression on erythrocyte membranes for HD patients may contribute to better preservation of intracellular ascorbate compared with healthy subjects..

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