Deadly calcium influx could be one way TSP-1 kills red blood cells and promotes disease

Rosi Bissinger
Polina Petkova-Kirova
Olga Mykhailova
Per-Arne Oldenborg
Elena Novikova
David A. Donkor
Thomas Dietz
Abdulla Al Mamun Bhuyan
William P. Sheffield
Marijke Grau
Ferruh Artunc
Lars Kaestner
Jason P. Acker
Syed M. Qadri

Video Byte

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Abstract

Thrombospondin-1, or TSP-1, is a calcium-binding protein implicated in the development of several diseases, including diabetes, cancer, renal failure, and cardiovascular disease. To understand TSP-1's role in disease, researchers recently examined the protein's effects on the calcium dynamics, survival, and deformability of red blood cells. In vitro experiments showed that exposure to recombinant human TSP-1 significantly increased calcium levels in red blood cells. TSP-1 treatment also induced an inward ionic current, suggesting possible calcium influx through non-selective cation channels, and TSP-1 caused the deformation of red blood cells. Further experiments revealed that TSP-1 binding to its receptor CD47 could dictate the lifespan of red blood cells in circulation. Altogether, the findings suggest that TSP-1/CD47 signaling could be one targetable pathway in systemic diseases that attack red blood cells.