
Lysis of Erythrocytes by Silicate Minerals¹

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¹ Journal paper 7795, Purdue University Agricultural Experiment Station.

Abstract: *In vitro* studies of the destruction (lysis) of bovine red blood cells (erythrocytes) by some silicate minerals showed the reaction to be complete in less than 1 hr and very destructive to the cell membrane. The activity as lysing agents was found to be in the order smectites > silica > palygorskite \approx sepiolite > chrysotile > kaolinite. Different compositions (Fe, Al, Mg, Li, vacancy) of the octahedral sheet of the smectite and fibrous clay minerals did not appreciably alter their hemolytic activity. The most active particle size range for kaolinite and montmorillonite was 0.2– 2 μ m. Structural folding of palygorskite reduced lysis suggesting that edge surfaces and silanol groups are important in this process. Aluminum oxides and hydroxides caused no lysis, and coatings of positively charged aluminum-hydroxy polymers on montmorillonite, silica, palygorskite, and kaolinite significantly reduced lysis.

Key Words: Chrysotile • Erythrocytes • Hemolysis • Kaolinite • Lysis • Palygorskite • Red blood cell • Sepiolite • Smectite

Clays and Clay Minerals; February 1986 v. 34; no. 1; p. 74-80; DOI: [10.1346/CCMN.1986.0340109](https://doi.org/10.1346/CCMN.1986.0340109)

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