

Permeability of the Red Blood Cell

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Demonstrators:

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Table 1. Mean observed hemolysis time and standard error for 0.3M samples of various solutions tested in the lab.

Solutes	Hemolysis Time (sec)	
	Mean	Standard Error
Distilled Water	<2	0 ^a
Urea	<2	0 ^a
Ethylene Glycol	7.67	0.34
Glycerol	875.34	74.67
Sucrose	>1200	0 ^a

^a unable to calculate Standard Error as there is no difference in recorded data.

Interpretation

1. What are the factors that affect the diffusion of the solutes tested in the permeability experiment?
 - Factors which affect the diffusion of solutes include polarity of the solute as well as the size of the molecules in the solutes.

2. How do these factors affect the diffusion of solutes?
 - Size of the molecule affects rate of hemolysis. Based on Table 1, the larger the molecule, the longer the hemolysis time. For example, sucrose and glycerol, which are larger molecules, have a significantly longer hemolysis time when compared to distilled water and urea, which are smaller molecules.
 - Polarity of the solute also determines the rate of diffusion of the solute. The polar solutes used in this experiment showed a longer hemolysis time than the non-polar ones. For example, sucrose, which is a long polar molecule, takes the longest hemolysis time in comparison to distilled water, which is a short polar molecule.