Flow Rate vs. Magnetic Field

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My project deals with the effect of a magnetic field on the flow rate of liquids and I compared this effect between liquids with varying amounts of molecules and ions. The purpose of my experiment was to find out if the flow rate of water can be controlled at a certain speed with a surrounding magnetic field and which liquid can be used or which ions can be added to solution to create the effect. I used distilled water, filtered tap water, and unfiltered tap water as well as 0.01 M, 0.1 M and 1 M concentrations of each of the following solutions: NaCl, KCl, Glucose, $CaCl_2$, and $Al_2(SO_4)_3$. To experiment I placed a container on a scale, directly underneath a buret. I then filled the buret to the 100 mL mark with the liquid. Next, I opened the valve and simultaneously started the timer. When the timer reached 90 seconds, I closed the valve and measured the weight of the liquid collected in the container from the buret. I performed the same procedure for each liquid ten times without the magnetic field and ten times with a magnetic field created around the buret. I observed that every liquid had a slower flow rate when the magnetic field was present as the mass was always smaller. As the concentration was increased in each solution, the effect of the magnetic field increased and as the liquid with the most ionic properties and post particles in solution, $Al_2(SO_4)_3$ had the greatest effect from the magnetic field and the least ionic liquid, distilled water, had the smallest effect. I concluded that the ions and amount of particles in solution was directly related to the impact of magnetic field to decreased the flow rate.

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