

JIM WEEKLEY, Dept. of Chemistry, Fairmont State University, Fairmont, WV, 26554, MARK FLOOD and ANGEL HICKMAN, Dept. of Biology, Fairmont State University, Fairmont, WV, 26554. Characteristics of octanol/water partitioning with acetaminophen.

Octanol and water partitioning is the mixture of two solvents to determine a chemical substance's partitioning coefficient. The calculation of the partitioning coefficient allows for the determination of how hydrophobic or hydrophilic the chemical is. This then allows for the estimation of how the drug reacts within the body. The objective of this experiment was to determine the partitioning coefficient of acetaminophen in an octanol and water mixture. A set amount of acetaminophen was dissolved into distilled water at room temperature, then this solution was used to make a 1:1 ratio of water to octanol for partitioning. This mixture was spun for twenty four hours, then the absorbance was measured by UV-Vis (known as the Shake-flask method) and mass spectrometry. Based on the results, the acetaminophen showed an absorbance in the expected range, and a relatively low partitioning coefficient, which showed that the chemical substance had higher qualities of being hydrophilic. The hypothesis of this experiment was that if acetaminophen was added to an octanol/water solution, the acetaminophen would be most absorbed in the hydrophilic layer. Based on the results, this hypothesis can be accepted.