Solvent Effects on Fluorescence of Tryptophan

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As the occurrence of cancer becomes more prevalent, scientists are eagerly encouraged to investigate means of combating the disease. After identifying the overabundance of L-type amino acid transporter 1 (LAT1) in the Blood Brain Barrier (BBB), researchers have indicated the significance of targeting LAT1 to increase the selectivity in cancer medication. This study primarily focuses on the LAT1 tryptophan to investigate how changing the solvent tryptophan comes in contact with affects the fluorescent emission. When conducting this experiment, a stock solution consisting of a mixture of tryptophan and the solvent is synthesized. The absorbance of the stock solution was tested at varying concentrations to assess the maximum absorbance rate. Afterward, the maximum absorbance is used to set the basis for the fluorescence spectrum, which will test the fluorescence of the stock solution in various concentrations of solvent. Based on the data collected, tryptophan in DMSO has the highest fluorescence intensity. Altogether, the stock solution is supposed to mimic a chemotherapeutic medication passing through the BBB, to which a higher fluorescence intensity will allow the drug to efficiently pass through the BBB and exclusively target tumor cells in the brain.

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