# Investigating Neurotransmitter Precursor Amino Acid Stability and Acidity at Varying Human Body Temperatures

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This study explores how human body temperature fluctuations affect neurotransmitter precursor amino acids involved in dopamine and serotonin production, aiming to understand their behavior and implications for human health, especially in optimizing neurotransmitter supplement prescriptions for temperature-related illnesses. The project, conducted in three experiments, involves determining dopamine and serotonin supplement capsule concentrations using titrations in Experiment #1 to establish a baseline understanding of amino acid concentration. Experiment #2 records absorbances at different wavelengths for each neurotransmitter precursor supplement, which is crucial for identifying the optimal wavelength in subsequent measurements. Experiment #3 extends the investigation to 37 and 39 degrees Celsius, representing the human body's resting and fever temperatures. Results indicate absorbance increases for serotonin precursor amino acids and decreases for dopamine precursor amino acids. A boxplot visually represents absorbance changes at these temperatures. The study also explores pH changes, attributing the observed decrease to factors such as temperature's inverse proportionality to pH, bond breaks, and autoionization. The project offers valuable insight into implications related to amino acid and neurotransmitter production under human body conditions.

**Awards Won:**