

## *Multi-Factorial Stability Study of Metabolites*

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Previous research done on metabolites has found that high energy compounds like adenosine triphosphate(ATP), nicotinamide adenine dinucleotide phosphate reduced (NADPH) or nicotinamide adenine dinucleotide reduced (NADH) are unstable in cell extracts at relatively high temperature and acidic condition. The multifactorial stability study of metabolites enables us to verify the best condition of storage for these energy compounds and sugar phosphates, as well as to strengthen the understanding of metabolism in biological study. As the most solvents for high performance liquid chromatography (HPLC) are acidic and unfavorable for these energy compounds, it is necessary to perform a detailed study about degree of instability of samples before running real samples on HPLC. The research aims to conduct a stability study of energy compounds and sugar phosphates using LC-MS/MS, under varying time points, temperatures and pH conditions. In this work we performed a factorial analysis of compound stability looking at differences in pH (acidic vs. neutral), and temperatures (room temperature of 20°C and temperature at which the standards are generally stored of 4°C). The samples are analyzed under 0, 1, 7, 24, and 168 hours after preparation. The results are enabling us to determine how fast these high energy compounds degrade in different temperatures and environment with various pH values. Future experiments on other pH and temperature combinations could be conducted in order to apply to samples more broadly and generally.