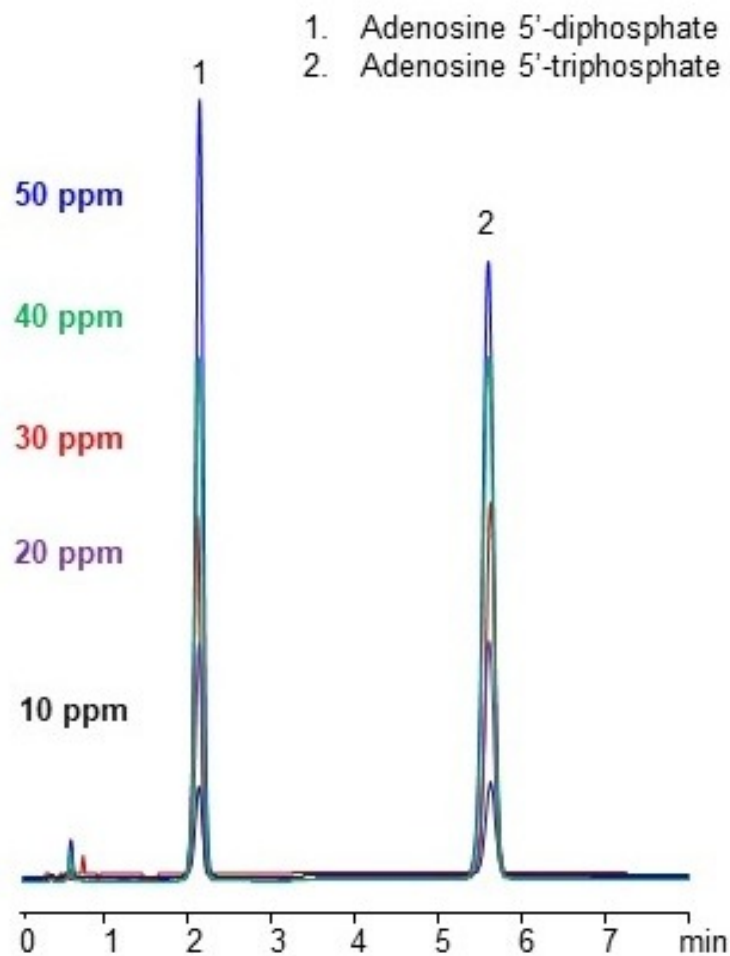


Quantitative UV HPLC Analysis of Adenosine Diphosphate and Adenosine Triphosphate on Amaze HA Mixed-Mode Column

Application description

Quantitative analysis of nucleotides such as adenosine diphosphate (ADP) and adenosine triphosphate (ATP) is crucial in various fields including biochemistry, pharmaceuticals, and medical research. High-Performance Liquid Chromatography (HPLC) offers a robust method for the accurate determination of these compounds due to its sensitivity, selectivity, and reproducibility. In this study, we present a method for the quantitative UV HPLC analysis of ADP and ATP utilizing an Amaze HA mixed-mode column. The utilization of the Amaze HA mixed-mode column in UV HPLC analysis provides an effective means for the quantitative determination of ADP and ATP. This method offers high sensitivity, precision, and reproducibility, making it suitable for various applications in research, pharmaceuticals, and biotechnology. The Amaze HA mixed-mode column combines hydrophobic and anion-exchange interactions, making it suitable for the separation of hydrophilic acidic, hydrophobic acidic, hydrophobic basic and hydrophobic neutral compounds. The stationary phase consists of hydrophobic alkyl chains with embedded hydroxyl and amine groups, providing both reverse-phase and anion-exchange interactions. This unique chromatographic characteristic allows for enhanced selectivity and resolution of analytes, making it particularly advantageous for the analysis of nucleotides like ADP and ATP. UV detection allows to achieve ppb levels of quantitation of these nucleotides. Adenosine Diphosphate (ADP): ADP is a nucleotide composed of adenine, ribose sugar, and two phosphate groups. It serves as an essential molecule in cellular metabolism, acting as an intermediate in the transfer of energy during biochemical reactions. ADP is involved in various cellular processes including signal transduction, DNA replication, and protein synthesis. Adenosine Triphosphate (ATP): ATP is a nucleotide comprised of

adenine, ribose sugar, and three phosphate groups. It is commonly referred to as the "molecular currency" of intracellular energy transfer due to its role as a primary energy carrier in cells. ATP plays a critical role in cellular processes such as muscle contraction, enzyme catalysis, and active transport across cell membranes.



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Conditions of Experiment

Column:	Amaze HA
Separation Modes:	reversed-phase, Anion-exchange
Column Dimenstions:	3x50 mm, 3 um, 100 A
Mobile Phase:	20% ACN with gradient of monobasic sodium phosphate pH 2
Detection:	275 nm
Sample:	0.1-0.1 mg/ml
Injection:	3 uL
Flow rate:	0.6 ml/min

Analytes

Class of compounds:	Metabolite, Nucleotide
Nature of compounds:	Acidic, Hydrophilic
Compounds:	Adenosine diphosphate, Adenosine triphosphate