NAD+
Research Applications

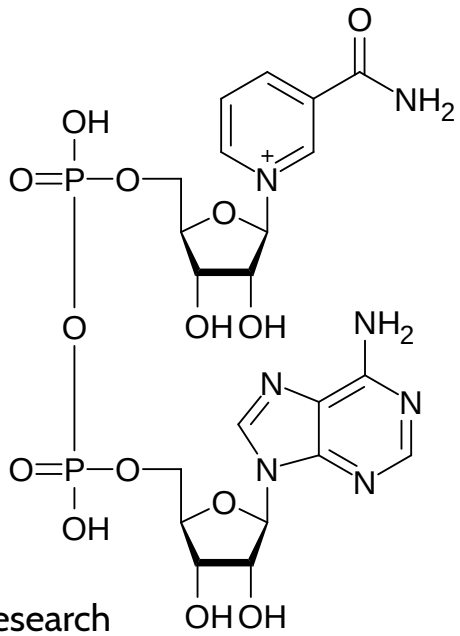
US Peptide Co

Mechanism of Action

NAD+ (Nicotinamide Adenine Dinucleotide) is a critical coenzyme found in all living cells that serves as an electron carrier in metabolic reactions. In research models, NAD+ functions as a substrate for enzymes including sirtuins, PARPs, and CD38, which regulate various cellular processes. NAD+ levels influence mitochondrial function, DNA repair mechanisms, and cellular stress responses, making it valuable for studying fundamental aspects of cellular metabolism.

Molecular Profile

- Chemical Formula: $C_{21}H_{27}N_7O_{14}P_2$
- Molecular Weight: 663.43 Da
- Nicotinamide adenine dinucleotide (oxidized form)



Laboratory Considerations

- Store lyophilized powder at -20°C
- Protect from light and oxidizing agents
- Avoid repeated freeze-thaw cycles

Research Applications

- Cellular energy metabolism and mitochondrial function research
- Investigation of NAD+-dependent enzyme activity
- Models examining cellular aging and senescence mechanisms
- Research on redox reactions and metabolic pathway regulation

References

1. Verdin E. NAD⁺ in aging, metabolism, and neurodegeneration. Science. 2015;350(6265):1208-1213.
2. Cantó C, et al. NAD(+) metabolism and the control of energy homeostasis: a balancing act between mitochondria and the nucleus. Cell Metab. 2015;22(1):31-53.
3. Rajman L, et al. Therapeutic potential of NAD-boosting molecules: the in vivo evidence. Cell Metab. 2018;27(3):529-547.
4. Fang EF, et al. NAD+ in aging: molecular mechanisms and translational implications. Trends Mol Med. 2017;23(10):899-916.