



NMNAT1 (Nicotinamide Mononucleotide Adenylyltransferase 1)

Product Data Sheet

For Research Use Only, Not for use in diagnostic procedures

# NMNAT1

## (Nicotinamide Mononucleotide Adenylyltransferase 1)

Human, recombinant protein expressed in *E. coli.*, Active

Cat# CY-E1252-1

Amount: 50µg (1.0 µg/µl)

Lot:

Specific Activity: >50 units/µg

### Introduction:

Nicotinamide mononucleotide adenylyltransferase 1 (NMNAT1) (EC 2.7.7.1) is a central enzyme in NAD biosynthesis, transferring the adenylyl moiety of ATP to nicotinamide mononucleotide (NMN) or nicotinic acid mononucleotide (NaMN) resulting in the formation of NAD or NaAD and the release of pyrophosphate. As this reaction is reversible, the enzyme may in principle be used to form ATP and NMN from NAD and pyrophosphate. This enzyme could be a potential target for therapeutical applications, because its activity is rather low in tumor cells. The deduced protein contains an N-terminal nuclear localization signal. Immunofluorescence microscopy localized endogenous NMNAT1 to the nucleus in human fibroblasts and in a hepatoma cell line. It was demonstrated that NMNAT1 inhibited recombinant human poly(ADP-ribose) polymerase-1 by about 35%, and it completely prevented the formation of branched ADP-ribose polymers.

### Product Description:

Human NMNAT1 (nicotinamide mononucleotide adenylyltransferase 1) containing an N-terminal His-tag, expressed in *E. coil.* and purified by nickel chelating agarose chromatography.

### Gene Information:

The gene accession number is NM\_022787.

### Gene Aliases:

Pyridine nucleotide adenylyltransferase1 (PNAT1), NMN adenylyltransferase1

### Formulation:

Recombinant NMNAT1 is supplied frozen in a buffer containing 50 mM Potassium phosphate buffer, pH 7.4, 1 mM DTT, 1 mM MgCl<sub>2</sub>, 0.5 mM EDTA, 300 mM KCl and 50% glycerol. Use a same buffer for dilution when needed.

### Molecular Weight: 33 kDa

Recombinant NMNAT1 demonstrates approximately 33 kDa band by SDS-PAGE analysis.

97 kDa--  
66 kDa--  
45 kDa--  
31 kDa--

Coomassie blue stain



## NMNAT1 (Nicotinamide Mononucleotide Adenylyltransferase 1)

### Product Data Sheet

**For Research Use Only, Not for use in diagnostic procedures**

#### Storage:

Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, AVOID REPEATED HANDLING AND MULTIPLE FREEZE/THAW CYCLES.

#### Stability:

Unopened vial at -70 °C, for 1 year after delivery.

#### Unit Definitions:

One unit is defined as the amount of nicotinamide mononucleotide adenylyl transferase required producing 1 μmol of NAD from nicotinamide mononucleotide (NMN) and ATP per minute at 30°C. Specific Activity will vary among production lots.

#### Assay condition:

Assay activity of NMNAT1 in a 100 μL reaction containing 50 mM Hepes KOH (pH 7.5), 0.65 mM NMN, 2 mM ATP, 12 mM MgCl<sub>2</sub>, 1 mM DTT, 200 g/mL BSA, 1.5 % ethanol and 2 μg of alcohol dehydrogenase. Start the reaction by adding 10 μL of the NMNAT1 enzyme (2-5 ng/μL) Incubate at 30°C. Read fluorescence intensity for 60 to 90 minutes at 2.5 to 5 minute intervals using microtiter plate fluorometer with excitation at 340 nm and emission at 460 nm. Measure and calculate the rate of reaction while the reaction velocity remains constant.

#### References:

1. Emanuelli, M., Rajaelli, N., Amici, A., Balducci, E., Natalini, P., Ruggieri, S. and Magni, G. (1995) *Biochem. Pharmacol.* 49: 575-579
2. Jayaram, H.N., Cooney, D.A. and Grusch, M. (1999) *Curr. Med. Chem.* 6: 561-574
3. Schweiger, M.; Hennig, K.; Lerner, F.; Niere, M.; Hirsch-Kauffmann, M.; Specht, T.; Weise, C.; Oei, S. L.; Ziegler, M (2001) *FEBS Lett.* 492: 95-100
4. Zhou, T.; Kurnasov, O.; Tomchick, D. R.; Binns, D. D.; Grishin, N. V.; Marquez, V. E.; Osterman, A. L.; Zhang, H. (2002) *J. Biol. Chem.* 277: 13148-13154
5. Felicitas Berger, Corinna Lau, and Mathias Ziegler (2007) *Proc Natl Acad Sci* 104: 3765-3770
6. Araki, T.; Sasaki, Y.; Milbrandt, J. (2004) *Science* 305: 1010-1013

#### Related Products:

- \* CycLex NAMPT Colorimetric Assay Kit: Cat# CY-1251
- \* CycLex NMNAT Colorimetric Assay kit: Cat# CY-1252
- \* CycLex NAD<sup>+</sup>/NADH Colorimetric Assay Kit: Cat# CY-1253
- \* NAMPT (Nicotinamide Phosphoribosyltransferase): Cat# CY-E1251
- \* NMNAT1 (Nicotinamide Mononucleotide Adenylyltransferase 1): Cat# CY-E1252-1
- \* NMNAT2 (Nicotinamide Mononucleotide Adenylyltransferase 2): Cat# CY-E1252-2
- \* NMNAT3 (Nicotinamide Mononucleotide Adenylyltransferase 3): Cat# CY-E1252-3
- \* CycLex SIRT1/Sir2 Deacetylase Fluorometric Assay Kit: Cat# CY-1151
- \* CycLex SIRT2 Deacetylase Fluorometric Assay Kit: Cat# CY-1152
- \* CycLex SIRT3 Deacetylase Fluorometric Assay Kit: Cat# CY-1153
- \* CycLex SIRT6 Deacetylase Fluorometric Assay Kit: Cat# CY-1156
- \* NAD(+)-Dependent Deacetylase SIRT1: Cat# CY-E1151
- \* NAD(+)-Dependent Deacetylase SIRT2: Cat# CY-E1152
- \* NAD(+)-Dependent Deacetylase SIRT3: Cat# CY-E1153



NMNAT1 (Nicotinamide Mononucleotide Adenylyltransferase 1)

Product Data Sheet

**For Research Use Only, Not for use in diagnostic procedures**

\* NAD(+)-Dependent Deacetylase SIRT6: Cat# CY-E1156

**PRODUCED BY**

CycLex Co., Ltd.  
1063-103 Terasawaoka  
Ina, Nagano 396-0002  
Japan  
Fax: +81-265-76-7618  
e-mail: [info@cyclex.co.jp](mailto:info@cyclex.co.jp)  
URL: <http://www.cyclex.co.jp>

CycLex/CircuLex products are supplied for research use only. CycLex/CircuLex products and components thereof may not be resold, modified for resale, or used to manufacture commercial products without prior written approval from CycLex Co., Ltd.. To inquire about licensing for such commercial use, please contact us via email.