

Certificate of Analysis

|              |                                                                 |                   |                                                                               |
|--------------|-----------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------|
| Product      | NAD <sup>+</sup> (β-Nicotinamide Adenine Dinucleotide)          | CAS No.:          | 606-68-8                                                                      |
| Product No.: | NAD <sup>+</sup>                                                | Molecular Formula | C <sub>21</sub> H <sub>27</sub> N <sub>7</sub> O <sub>14</sub> P <sub>2</sub> |
| Sequence     | β-Nicotinamide Adenine Dinucleotide<br>(Disulfide bridge: None) |                   |                                                                               |
| Batch No.    | NAD <sup>+</sup> -240601                                        | Quantity          | 100mg                                                                         |
| Mfg. Date    | June 01, 2024                                                   | Retest Date       | May 31, 2026                                                                  |

| [ ITEMS ]                                                | [ SPECIFICATIONS ]                                                                                                                     | [ RESULTS ]              |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Appearance                                               | White or almost white lyophilized powder                                                                                               | White lyophilized powder |
| Solubility                                               | Freely soluble in water                                                                                                                | Conforms                 |
| Solution clarity and color                               | Clear and colorless                                                                                                                    | Conforms                 |
| Specific optical rotation [α] <sub>D</sub> <sup>20</sup> | +20.0° ~ +24.0° (anhydrous and sodium ion-free substance)                                                                              | +21.3°                   |
| Identification by HPLC                                   | The retention time of the principal peak of the test solution corresponds to that of the reference solution, as obtained in the Assay. | Conforms                 |
| Molecular weight                                         | About 663.4 Da                                                                                                                         | 663.2                    |
| Mass spectrum                                            | 662.1±1.0                                                                                                                              | 662.3                    |
| pH (1% solution)                                         | 2.5 ~ 4.0                                                                                                                              | 3.1                      |
| Water content (KF)                                       | NMT 8.0%                                                                                                                               | 2.3%                     |
| Peptide content (HPLC)                                   | N/A                                                                                                                                    | N/A                      |
| Purity (HPLC)                                            | NLT 98.0%                                                                                                                              | 99.35%                   |
| Related substances (HPLC)                                | Any individual impurity: NMT 1.0%<br>Total impurities: NMT 2.0%                                                                        | 0.15%<br>0.42%           |
| Nicotinamide (HPLC)                                      | NMT 0.5%                                                                                                                               | 0.08%                    |
| Amino acid analysis                                      | Asp: 1.0~2.0<br>Glu: 1.0~2.0<br>Ala: 1.0~2.0<br>Gly: 1.0~2.0                                                                           | 1.1<br>1.0<br>1.0<br>1.1 |
| Disulfide bridge                                         | Should not be detected                                                                                                                 | Conforms                 |



|                                                                                        |                                                                                          |                                  |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------|
| Residual solvent                                                                       | Methanol NMT 3000ppm<br>Ethanol NMT 5000ppm<br>Acetonitrile NMT 410ppm<br>DMF NMT 880ppm | N.D<br>28ppm<br>N.D<br>N.D       |
| Bacterial endotoxins                                                                   | NMT 10EU/mg                                                                              | <3EU/mg                          |
| Microbial limits                                                                       | TAMC NMT 100 cfu/g<br>TYMC NMT 100 cfu/g<br>E. Coli: Absent                              | <10 cfu/g<br><10 cfu/g<br>Absent |
| Assay (C <sub>21</sub> H <sub>27</sub> N <sub>7</sub> O <sub>14</sub> P <sub>2</sub> ) | 95.0%~105.0% (Calculated with reference to the anhydrous and sodium ion-free substance.) | 99.21%                           |
| Storage                                                                                | Keep in tight container, protect from light, store at a temperature of -20±5°C.          |                                  |
| Report                                                                                 | Li peng                                                                                  | Date 2024. 06. 03                |
| Reviewer                                                                               | Fang Hui Liao                                                                            | Date 2024. 06. 03                |
| Conclusion: This batch of product complies with Enterprise Standards.                  |                                                                                          |                                  |



It is only supplied as chemical product.  
It is only for R&D use.

Testing Organization:  
Shanghai High Purity Peptide Biotechnology Co., Ltd.  
上海高纯肽生物科技有限公司