SIGNAL PEPTIDE ACADEMY
LEARN · UNDERSTAND · APPLY

NAD+

Nicotinamide adenine dinucleotide, a coenzyme (related compound, not a peptide)

CARD 103

CLASS	CLINICAL CATEGORY	EVIDENCE LEVEL	OVERALL STATUS
Coenzyme (related compound)	Energy metabolism / aging research	Low (precursors); very low (IV)	No FDA-approved NAD+ drug



KEY APPLICATIONS

- **Cellular energy** — Redox coenzyme
- **Aging research** — Precursor studies
- **IV infusion** — Pilot kinetic data only
- **Precursors** — NR and NMN trials

⚠ **Studied for: restoring NAD+ levels that fall with age and disease.** Precursors raise NAD+ in people, but functional benefits remain unclear; IV NAD+ has pilot data only.

HOW IT WORKS IN THE BODY

Precursors (NR, NMN) → NAD+ → Sirtuins, PARPs, CD38 → Energy and repair pathways

- Essential **redox coenzyme** in energy metabolism.
- Consumed by **sirtuins, PARPs and CD38**.
- Oral precursors (**NR, NMN**) raise NAD+ and metabolites in human trials.
- In an IV pilot, infused NAD+ was **cleared from plasma** for the first 2 hours.

QUICK PRACTICAL INFO

HALF-LIFE	ROUTES STUDIED
Not established for IV use	Oral precursors; IV (pilot)
PHARMACOKINETICS	**STABILITY**
IV: rapid plasma clearance (pilot)	Degrades in solution
INTERACTIONS	**MONITORING**
Not well characterized	Not defined outside trials

EVIDENCE & SAFETY

EVIDENCE

LOW
PRECURSOR TRIALS

- Precursor trials report **short-term tolerability**.
- Physiological benefits **unclear**; samples small.
- IV NAD+: **one pilot kinetic study**.

CLINICAL CAUTION

- Long-term IV safety **not established**.
- **No FDA-approved** NAD+ drug.
- **Variable quality** in unregulated products.
- Caution in **pregnancy and lactation**.

REGULATORY STATUS

FDA	EMA	ANVISA	WADA	Research	Off-label
Not approved as a drug	Not authorized	Status not confirmed	IV over 100 mL / 12 h prohibited (M2.2)	Yes, mostly precursors	No established backing

CLINICAL READ IN 10 SECONDS

- Coenzyme, **not a peptide**.
- Precursors **raise NAD+** in people.
- **Functional benefits unclear**.
- IV NAD+: **pilot data only**.

KEY REFERENCES

Freeberg et al., 2023 — J Gerontol A (review of NAD+ precursors)

PubMed — NR and NMN randomized trials

Grant et al., 2019 — Front Aging Neurosci (IV NAD+ pilot)

WADA — Prohibited List, method M2.2

Technical, informational content. It does not replace individualized clinical judgment or constitute a recommendation. No dose, protocol or source is provided.