

NAD+ and Reproductive Health Protocol

The Importance of NAD+ for Reproductive Health

NAD+ is needed for over 500 processes in the body to ensure adequate cellular energy production (ATP) to support the mitochondria. It is a cofactor for enzymes involved in glycolysis, oxidative phosphorylation (OxPhos), and the tricarboxylic acid cycle (TCA), also known as the Krebs cycle. It has been shown to decline with age in human organs including the liver, kidney, muscle, and others.¹

Mitochondrial dysfunction is related to ovarian aging. Increasing NAD+ improves mitochondrial function and has led to an increased number of ovarian follicles and ovulatory potential in aging mice.²

NAD+ deficiency is one of the many known causes of adverse pregnancy outcomes, but its prevalence in the human population and among pregnant women is unknown.³

NAD+ is depleted with age and exposure to metabolic stressors such as:

- Poor diet
- Sedentary lifestyle
- Excess sun exposure
- Immune health challenges

Nutrition and Exercise Considerations for Reproductive Health

Pregnancy has been likened to running consecutive marathons for the duration of your pregnancy. A 2019 study showed pregnancy increased basal metabolic rate over 2x higher than non-pregnant women.⁴ We know living a healthy lifestyle is important for overall health, however it's vital for supporting reproductive health. Given the increased nutritional needs during pregnancy, it's important to incorporate a healthy dietary pattern as you plan to grow your family. It takes a lot of energy to sustain a successful pregnancy.

Choose a nutrient-dense nutrition plan including vegetables, fruit, healthy fat (avocado, nuts/seeds, olive oil), whole grains, and lean protein, which are important when trying to conceive. Remember to eat enough protein, which can be difficult for women. And don't

forget about hydration, consume at least 8-10, 8 oz glasses of water each day and ensure you get enough electrolytes, especially in hot and humid climates.

When it comes to exercise as you try to conceive, it's important to maintain your current exercise program until your healthcare provider suggests otherwise. If you don't have a regular exercise routine, consult with your doctor prior to implementing a new exercise program. Exercise can help maintain healthy blood sugar and circulation.

Supplement protocol (Recommendations based on Dr. Aimee's protocol; Dr. Aimee is a fertility doctor known as The Egg Whisperer)

Please note it is recommended to speak with your healthcare provider about any supplement you want to add to your daily routine when planning for a baby.

1. Prenatal vitamin with vitamin B9, as recommended by your healthcare provider
2. Tru Niagen® (patented nicotinamide riboside or NR), the most efficient NAD+ precursor
3. CoQ10
4. NAC (if endometriosis is suspected)
5. Resveratrol (if you have fibroids/have concerns about ovarian aging)

References

1. Camacho-Pereira, J. et al. CD38 Dictates Age-Related NAD Decline and Mitochondrial Dysfunction through an SIRT3-Dependent Mechanism. *Cell Metab* 23, 1127–1139 (2016).
2. Yang, Q. et al. Increasing ovarian NAD+ levels improve mitochondrial functions and reverse ovarian aging. *Free Radical Bio Med* 156, 1–10 (2020).
3. Dunwoodie, S. L., Bozon, K., Szot, J. O. and Cuny, H. Nicotinamide Adenine Dinucleotide Deficiency and Its Impact on Mammalian Development. *Antioxid. Redox Signal.* 39, 1108–1132 (2023).
4. Thurber, C. et al. Extreme events reveal an alimentary limit on sustained maximal human energy expenditure. *Sci. Adv.* 5, eaaw0341 (2019).